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A STUDY TO DETERMINE

THE BEST METHOD OF CARING FOR CERTAIN SHORT-STAY SURGICAL PATIENTS AT REYNOLDS ARMY COMMUNITY HOSPITAL

A Graduate Research Project

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by

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TABLE OF CONTENTS

Chapter I - Introduction

Background

The healthcare administration classroom of 1995 may consider the decade of the 80's to be the most significant period in our history in the development of healthcare delivery mechanisms. This is due to the magnitude and the rapidity of change, and the extent and impact of the change on both the healthcare system and the general population. We are in an era of radical change, challenging ethics, questioned roles, and powerful new consumers. Many of these changes coming to fruition now, have their roots in events of previous decades. They represent the culmination of years of underlying and interdependent movement in the practice and delivery of medicine.

Perhaps one of the most significant and far-reaching changes is the shifting emphasis from the delivery of care in the inpatient setting to the delivery of care in many alternative settings. Whether this is a cause or an effect of other changes can be debated. But a clear fact is that the inpatient part of hospitals is no longer an area of growth, while outpatient care is thriving. From 1983 to 1985, the number of inpatient days fell 14.5 percent, while

outpatient visits to hospitals increased 6 percent (American Hospital Association [AHA], 1987). Between 1968 and 1985, the average length of a hospital stay for those over 65 fell from 13.4 days to 8.8 days, with a similar decline for those under 65 in all other payment groups (Easterbrook, 1987). Hospital occupancy rates have decreased from 80 percent in 1970 to 69 percent in 1985 (AHA, 1986).

Part of the shift from inpatient care to outpatient care is associated with improved methods and technologies of care which foster better utilization of resources. A notable example of this is the large increase in the number of ambulatory surgery procedures, and the growth in the numbers of centers specializing in ambulatory surgery. The American Hospital Association states that between 1981 and 1986 the number of hospital-based ambulatory surgery visits nationwide rose 136 percent, from 3.7 million to 8.7 million, with 73 percent of the hospitals surveyed offering organized ambulatory surgery programs (AHA, 1987, January-February). In addition, 529 freestanding surgery centers performed nearly 1 million surgical operations in 1986 (Lutz, 1987). In 1979, 18 percent of all hospital surgeries were done on an outpatient basis (Detmer & Buchanan-Davidson, 1982), but a

recently released Rand Corporation report concluded that an additional 17 percent of inpatient surgeries could have been done on an outpatient basis (AHA, 1986, November 14). In 1972, Davis and Detmer predicted that up to 40 percent of all surgery could be done on an outpatient basis. This has already been exceeded in Salt Lake City (Orkin, 1985; Wong, 1984, September).

The working definition of ambulatory surgery used for this paper (adapted from Perrett, 1983) is surgery where the patient enters the facility in the morning, has an operation, and can reasonably expect tc go home the same day. It includes those surgical procedures not requiring extended postoperative monitoring and hospitalization to produce a favorable outcome. This concept of ambulatory surgery is not new. A report on 7,320 operations performed on ambulatory patients was presented to the British Medical Association in 1909 (Burns & Ferber, 1981). In subsequent years, ambulatory surgery continued to be practiced randomly in some hospitals in this country.

A change occurred in this loosely structured practice in 1970. The first successful independent ambulatory surgery center was founded in Phoenix, Arizona (Detmer & Buchanan-Davidson, 1982), and, in 1971, the Presbyterian Healthcare System in

Dallas, Texas, was one of the first hospitals to open an organized outpatient surgery department (Hawthorne, 1981). From the success of these early ventures, two basic delivery models developed. These models are generally categorized as either hospital-based or freestanding. A hospital-based center is one which is physically within or connected to a hospital, so that patients developing complications can be easily moved into a regular inpatient setting. A freestanding ambulatory surgery center is one not physically connected with a hospital. In this model, the center has agreements with conveniently located hospitals to accept any patients developing complications during the visit.

Two major issues seem to have provided support for the growth of ambulatory surgery. The first of these is cost. Ermann and Gabel (1985) reviewed the findings of four studies, all of which showed that ambulatory surgery is significantly less expensive than inpatient surgery for the same procedures. The freestanding model was noted as having a slightly lower cost than the hospital-based model. These reduced costs were attributed to reduced requirements for food service, nursing service, and overnight bed facilities, and to

the often lower cost of the actual surgery (Ermann & Gabel, 1985; Wolff & Dunnihoo, 1982).

The second major issue is quality of care. Natof (1980) and Pinneault, Constandriopoulos, Valois, Bastian, and Lance (1985) studied clinical outcomes and complications in ambulatory surgery. They found no significant differences between inpatient surgery and ambulatory surgery for the procedures studied. Ermann and Gabel (1985) also reviewed seven studies examining quality of care. They concluded that "ambulatory surgical outcomes have been impressive" (p. 410), when measured by typical indicators such as death rates, complications, and transfers to more intense levels of care. Some problems have been noted in the area of quality assurance, though. These are primarily related to improper patient selection resulting in complications and unanticipated transfers (Ermann & Gabel, 1985; Griffith, 1986). Patient satisfaction with ambulatory surgery has also been higher than with inpatient procedures, and was attributed to both cost and quality factors (O'Donovan, 1979).

Although the literature has demonstrated that ambulatory surgery, on an individual case basis, is less expensive, lower costs cannot be assumed at the institutional level (in the case of a hospital-based or

affiliated model), or within a health system or community. At the institutional level, direct patient care savings have generally been demonstrated; however, it is possible that beginning a program of ambulatory surgery could be cost ineffective to the institution (O'Donovan, 1979). If workload is shifted from the inpatient wards to a newly established ambulatory surgery center, but no adjustment is made to staffing on the wards, then ambulatory surgery has only served to increase costs. But if shifted work can be replaced by traditional inpatient work or is combined with a reduction in staff, then it may be a cost effective option.

At a health system or community level, implementation of ambulatory surgery may well be an expensive proposition. The opening of more surgical facilities and the resulting competition for patients may cause an increase in the total amount of surgery being accomplished. This may draw patients away from existing facilities, causing or adding to an overbedding problem, and increasing total cost to the public because of less efficient utilization. If no resource adjustment is or can be made, then aggregate health care spending may increase (Taylor & Sartorius, 1986, Wolcott, 1981). Thus, any study must look beyond

the individual procedure or patient and attempt to account for wider-ranging impacts of such a program.

The trend toward ambulatory surgery has not gone unobserved by United States Army hospitals. Using various names, such as same-day surgery, short stay surgery, or in-and-out surgery, ambulatory surgery has been started at several U.S. Army facilities, including: Madigan Army Medical Center (MAMC), Fort Lewis, Washington; Eisenhower Army Medical Center (EAMC), Fort Gordon, Georgia; Walter Reed Army Medical Center (WRAMC), Washington, D.C.; Darnall Army Community Hospital, Fort Hood, Texas; and Cutler Army Community Hospital, Fort Devens, Massachusetts. The United States Army Health Services Command (HSC) has published regulatory guidance on the establishment of ambulatory surgery units in HSC Pamphlet 40-7-3, Ambulatory Surgery, and several other Army hospitals are reportedly investigating the establishment of such units.

In previous years, the leadership of Reynolds Army Community Hospital (RACH), part of the Fort Sill Medical Department Activity (MEDDAC), gave some consideration to the possibility of instituting ambulatory surgery, but concluded that it could not be done due to the limited amount of space in the existing

structure and due to personnel shortages. However, the command has agreed that a thorough examination should now be made of the possibility of beginning a program for several reasons.

First, some surgeons have complained about having insufficiently available operating room time and they have also reported an unmet demand for surgery. While this is difficult to verify, some waiting lists do exist, especially for elective procedures. Ambulatory surgery may provide some means of meeting increasing demand for services.

Second, a quality of care issue has arisen which concerns the growing amount of surgery being performed in clinic treatment rooms. This is associated with the full implementation of the family practice model at this installation, which resulted in a large increase in the number of assigned family practice physicians. Many of them are credentialed to do limited surgical procedures and, as a matter of convenience, have been doing them in their clinics. While much of this surgery can be safely performed in a clinic, some service chiefs and the command group have expressed a concern that a significant portion of it may more appropriately be done in a controlled ambulatory surgery environment.

Third, returning this workload to an inpatient basis would also enhance the MEDDAC's revenue situation, as workload counting and resource allocation systems reward more heavily for procedures admitted to the hospital than for outpatient procedures. This is true in the current system and also in the proposed system of prospective payment which is scheduled to start in fiscal years 89 or 90. Under this system, it is extremely important to reduce hospital lengths of stay to lower costs and improve the margin between expenses and revenues. Ambulatory surgery may play a key role in accomplishing this, due to shorter average lengths of stay.

Finally, a new hospital is under construction. The operating area is being designed to accommodate special ambulatory surgery requirements. Although occupancy of that portion of the new facility is several years away, it would be desirable to have a functioning ambulatory surgical service in place prior to that time, to facilitate the transition.

Because of the concerns outlined above, it was appropriate to examine the mode of surgical delivery for certain short-stay surgical patients at RACH.

Statement of the Problem

To determine the best way to provide surgery to selected cases or categories of patients at Reynolds Army Community Hospital, Fort Sill, Oklahoma.

Objectives

The objectives of this study were to:

1. Develop a prospective list of selected surgical procedures that could clinically be performed at this hospital on an ambulatory basis.

2. Develop criteria for selection of specific patients as candidates for ambulatory surgery.

3. Determine the optimum utilization of the physical plant and the personnel resources necessary to support ambulatory surgery and the corresponding patient flow.

4. Determine Joint Commission on Accreditation of Hospitals (JCAH) criteria for quality of care in ambulatory surgery and develop a plan to meet those criteria.

5. Develop a final list of approved procedures based on objectives 2 through 4, and develop a workload projection for that list.

6. Estimate the cost and revenues of doing the final group of procedures in their current mode, and

project the cost and revenues of doing them on an ambulatory basis. This cost estimate was to include the personnel, logistical and capital resources currently in use and all changes proposed for implementation.

Criteria

1. The Chiefs, Departments of Surgery and Nursing, and the Deputy Commander for Clinical Services must grant approval to the list of procedures clinically capable of being accomplished here as developed in Objective 1.

2. The Quality Assurance Committees of the Departments of Medicine, Surgery, and Nursing, and the MEDDAC Quality Assurance Committee must approve the guidelines on selection of appropriate patients developed in Objective 2.

3. The Chiefs of the Anesthesia and Operative Service, Operating Room Nursing Section, Department of Surgery, Department of Nursing, and Deputy Commander for Clinical Services must approve the patient flow plan developed in Objective 3.

4. The MEDDAC Quality Assurance Committee must approve the criteria and standards of quality care which are developed in Objective 4.

5. The Deputy Commander for Clinical Services must grant approval to the final list of procedures and the workload estimate.

6. The Comptroller and the Internal Auditor must approve the impact analysis developed in Objective 5. If savings or revenue enhancement are generated by implementation of ambulatory surgery, implementation may be considered feasible, and the project will be submitted to the Commander for approval.

Assumptions

None.

Limitations

1. Physical plant modifications costing in excess of $10,000, the limit for RACH approval, were not considered unless absolutely essential for implementation. This was necessitated because of the long lead times needed to complete construction projects which require approval from higher headquarters. Rapid implementation of any appropriate and feasible changes was necessary. This was due to the ongoing construction of a new hospital, which would greatly reduce the return on investment for any large construction project in the current facility.

2. Current staffing levels must be maintained. Because of the uncertainty of the availability of any additional authorizations for military and civilian personnel, and because of a serious funding shortfall in payroll money, additional personnel to support ambulatory surgery would not be available. This did not preclude the transfer of personnel from one function to another in order to support ambulatory surgery.

Research Methodology

Information to support this study was gathered from three sources: literature review, review of selected other programs in both military and civilian settings, and interviews with appropriate personnel.

Programs reviewed included those at both civilian hospitals in the neighboring civilian community of Lawton, Oklahoma, and those at Darnall Army Community Hospital, Cutler Army Community Hospital, and Walter Reed Army Medical Center.

Information gathered in the literature review and program review was used as a basis for discussion when interviewing personnel at RACH. Personnel interviewed included the Commander, Deputy Commander for Clinical Services, and Deputy Commander for Administration; the

chiefs of the following departments and services: Family Practice, Surgery, Medicine, Nursing, Anesthesiology and Operative, Operating Room Nursing, Patient Administration, Comptroller, and Logistics; and the following individuals: all surgeons, the Quality Assurance Coordinator, and the Credentials Officer.

The information collected was analyzed and organized following four basic principles given by Alexander (1986): procedure, patient, place, and personnel. The sequential development of requirements based on these principles was followed in the study. The principles of place and personnel were considered together, because of the inability to examine resource inputs without examining their interdependence. Additionally, quality assurance implications and cost and revenue estimates were examined in determining feasibility.

Consequently, the steps below were followed in developing and presenting this study. Although they are presented in sequential fashion, each part was not completely separate from the other, but they were necessarily developed conjointly.

1. Surgical procedure selection. A literature search was conducted to create a list of possible procedures based on what is the currently accepted practice.

Bruns (1982), Detmer and Buchanan-Davidson (1982), Wolcott (1981) and others listed commonly performed procedures in other settings, but not all would be appropriate for RACH. Lists from literature and existing programs were combined and used as a starting point for analysis. All one- two- and three-day surgical admissions to RACH during 1986 were examined and compared to reduce the list of possible outpatient surgical procedures to only those currently being accomplished at RACH. All surgeons were interviewed to (1) add to the list those procedures being performed in clinics and delete those not performed here, and (2) determine the acceptability of performing these surgeries in an ambulatory surgery setting.

2. Patient selection. Ambulatory surgery is not acceptable for all patients. Proper preoperative assessment is critical to a successful outcome. It is dependent on nursing, anesthesia, and the surgical staff working together (Miller, 1985). Patient selection criteria were initially based solely on the literature review. They were then refined during interviews with appropriate clinical staff, those who would be involved in preoperative assessment of the patient.

3. Patient flow and resource utilization. Several options exist to implement ambulatory surgery which were evaluated to determine if ambulatory surgery is feasible. Personnel and space requirements were examined together because of their interdependence in determining optimum patient flow. In the operating room area, there are currently five operating suites, but, due to staffing limitations and physical plant problems, only four are in use. The fifth room could be opened and dedicated to ambulatory surgery; or ambulatory surgery could be integrated into the regular surgical schedule, rearranging major and minor procedures and perhaps better utilizing existing resources. During the pre- and postoperative portion of a patient's stay, there are serious space limitations which make management of additional patients during the admission and recovery phases most difficult. Key personnel used floorplans and staffing guides to analyze various possibilities to develop the flow most suited to RACH.

4. Quality assurance. A review of the Accreditation Manual for Hospitals (JCAH, 1986) and the AORN Standards and Recommended Practices for Perioperative Nursing (AORN, 1986) was accomplished to determine quality assurance standards and infection control

standards which must be met. Some areas of particular concern, which were included in the proposed plan, were traffic patterns, patient handling, staffing requirements necessary to meet the standards, and transfer of patients to a higher level of care in the event of a problem (JCAH, 1986; Reed & Applegeet, 1986). The standards were reviewed by appropriate physician, nursing, and quality assurance staff.

5. Final surgical procedure list and workload estimate. Based on all information collected, a final list of procedures to be accomplished in a proposed ambulatory surgery center was created. From this list a workload projection was done, using workload information in the Inpatient Data System and in clinic workload documents.

6. Impact analysis. Based on the workload and resource projection developed above, total impact on hospital costs and workload were estimated. As the Army does not operate on a true revenue basis, savings and revenue could only be estimated using resource management indicators commonly used throughout HSC. The indicators used included: Medical Care Supply Cost Per Medical Care Composite Unit, Medical Care Cost Per MCCU, Medical Care Personnel Staffing Ratio, Average Length of Patient Stay, and Hospitalization Cost Per

Occupied Bed Day. One additional indicator was developed: Hospitalization Cost per Admission. The interplay of these management indicators can be very complex and dynamic, making it impossible to state categorically that any specific combination had to be up or down to indicate improvement or lack of improvement; rather they were viewed together to gain an overall impression of the impact of implementation. This information, along with the other information developed and approved in the previous steps, was submitted to the commander for final feasibility approval.

Implementation

The project was considered feasible and was approved for implementation on a limited basis. An implementing directive was prepared and is enclosed as part of this study. Unfortunately, the writer departed RACH prior to full implementation of the approved concept. He is, therefore, unable to comment personally on the success or failure of the implementation. Discussion with personnel at RACH since the author's departure indicate that some success has been seen, but that the projected workload has not yet been reached.

Chapter II - Discussion

Surgical Procedure Selection

Development of Procedures List

The scope of treatment to be provided in an ambulatory surgery center can be quite wide, ranging from minor suturing of lacerations or mole removals to major surgical procedures such as hysterectomies (Staff, 1985, September). This breadth of practice became very obvious in preparing a list of procedures which could be performed in a center at RACH. HSC requires (HSC, 1986, August 13), and indeed, good practice dictates that such a list be prepared (Staff, 1984, September; Griffith & McLaughlin, 1985; Orkin, 1985). Existing lists of approved surgical procedures were provided by the following facilities:

Walter Reed Army Medical Center, Washington, DC

Darnall Army Community Hospital, Fort Hood, TX

Cutler Army Community Hospital, Fort Devens, MA

Comanche County Memorial Hospital, Lawton, OK

Southwestern Medical Center, Lawton, OK

Surgicenter, Phoenix, AZ

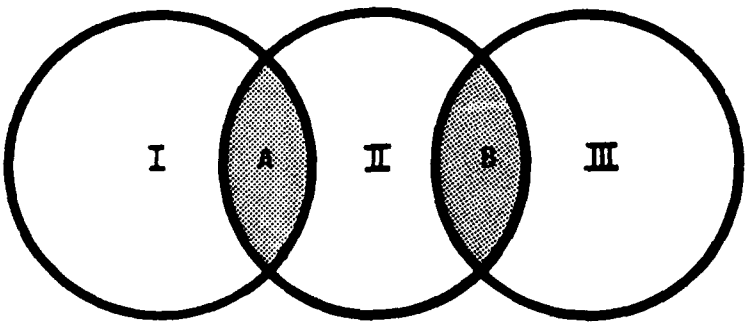
These lists were consolidated into one list of over 330 surgical procedures in nine services and eleven

diagnostic procedures. This list was then used as the basis for analysis.

There were problems noted in using these lists. Depending on which part of the country a particular list came from, the name of a procedure could be different. Or in some cases, different procedures were included under the same name. These problems were cleared up during the interviews, but another more significant one appeared, not unexpectedly. This dealt with the classification of surgery as major or minor.

Classification of Surgery

Physicians were concerned that the list would become the controlling factor in decisions on surgery, without recognizing individual patient differences. In dealing with this concern, a model created by Detmer and Buchanan-Davidson (1982) was extremely helpful, and provides a functional classification of surgical procedures. This model is shown below.



Surgery has traditionally been classified as major and minor, but this model depicts surgery in three classes: Class I, minor; Class II, intermediate; and Class III, major procedures. These three classes correlate with the location of the surgical setting. Class I is identified with office procedures, Class II with an ambulatory surgery center, and Class III with typical inpatient surgery. But, as shown in the model, substantial overlap exists between the classes, represented by the shaded areas A and B. These areas represent those cases in which considerations other than the procedure itself cause a case to move into other than its normal class. There would be no reason that a procedure considered as Class I or II could not be done at a higher level, if the surgeon or anesthesiologist did not think the setting appropriate for the patient.

A major purpose for creating a list is to limit the freedom with which a procedure can be done at a lower level of classification. This is necessary to alleviate risk management concerns about care being provided at a lower level than is clinically appropriate (Griffith & McLaughlin, 1985). This also does not prevent procedures not on the list from being done in an ambulatory surgery setting, but instead,

forces clinical decision makers to look more closely at those specific cases which would be moved to a lower level.

Other Considerations

As Orkin (1985) points out, a list of procedures is not static, but may grow yearly as technology changes and the boundaries of acceptability expand. Recognizing this, he has provided the following general guidelines for selection of procedures on an individual case basis: "appropriate procedures are generally those that are accompanied by minimal blood loss and physiological derangements and are associated with minimal, or at least readily controlled, postoperative pain, nausea and vomiting, and other postoperative complications" (Orkin, 1985, p. 82). Only limited or simple operations which do not routinely augur the possibility of more extensive problems should be considered (Alexander, 1986). Other formerly accepted rules of thumb such as surgical durations not to exceed 60 to 90 minutes, or categorization according to anesthetic technique, no longer appear warranted or appropriate due to improved surgical and anesthesia techniques (Orkin, 1985; Staff, 1985, December).

In this regard, it was noted during the literature review that there is a great amount of research being

done into developing more effective surgical techniques which could also greatly increase the efficiency of surgeons, and thereby shorten the time that a patient is in the operating room. An earlier guideline about not doing procedures that require invasion of major body cavities (Staff, 1984, September), may soon fall by the wayside. New techniques in laparoscopic surgery, particularly utilizing new laser technologies, are allowing total hysterectomies to be selectively done in ambulatory surgery (Staff, 1985, June) and may soon allow ambulatory appendectomies and cholecystectomies as well (Wong, 1984, September).

In relation to these technical advances in surgery, it was interesting to note the variation among physicians in their level of knowledge about ambulatory surgery. Some were very familiar with the concept of ambulatory surgery and what it signifies. Others had only a slight understanding of its place in medicine. Particular understanding was evident among those physicians who had entered the Army from private practice in the last few years. They have already faced many of the changes in medicine which are only now beginning to confront the military. As such, they have a strong appreciation for the need to expand

ambulatory surgery in response to the changing marketplace.

Anesthesia support for ambulatory surgery can be provided using general, regional, or local techniques appropriate to the procedure. Some adjustments may be necessary in the selection of anesthetic agents to balance the need for rapid recovery with the need for reduced nausea and other side effects, and to facilitate discharge (Dawson & Reed, 1980). Consequently, anesthesia requirements are not generally considered a limiting factor in the selection of procedures appropriate for ambulatory surgery.

During the interviews with physicians in each service, a consensus was reached about each of the listed procedures. The list developed above was then modified into the final list of appropriate procedures shown at Appendix A. Although the list is rather extensive, experience in civilian facilities indicates that the large majority of procedures done in ambulatory surgical centers fall into a very small number of procedures. For example, in 1983, over 50 percent of surgeries done in freestanding surgery centers were in three groups: dilatation and curettage, tubal ligation, and myringotomy (Staff, 1984, July).

This list was submitted to the Chiefs of the Department of Surgery and Department of Nursing for their concurrence. The Deputy Commander for Clinical Services subsequently approved the list.

Patient Selection

Just as the range of procedures has widened with experience in ambulatory surgery, so have the criteria for selection of patients. And, whereas anesthesia requirements are not limiting in selecting procedures, they are among the most important requirements to be dealt with in selecting patients. In fact, it has been recommended that the anesthesiologist be the medical director of the ambulatory surgery unit and have the final decision on any patient's suitability (Orkin, 1985; Staff, 1984, September).

Primary Selection Criteria

In addition to routine surgical limitations such as the presence of infection or the common cold, which should preclude surgery (HSC, 1986, August 13; Orkin, 1985), other critical requirements exist related to the circumstances surrounding the surgery and pre- and postoperative care. For anesthesia purposes, surgical patients are routinely placed into the American Society

of Anesthesiologists' (ASA) Physical Status Classifications. This categorization is based on information gained during the preoperative assessment. (These classes are not to be confused with the surgical procedures classes shown earlier in the Detmer and Buchanan-Davidson model.) A Class 1 patient is one who is healthy with no problems other than that requiring the surgery, while a Class 2 patient is one with mild systemic disease, such as moderate obesity or diet-controlled diabetes. In the development of ambulatory surgery, candidates were initially limited to those in Class 1; then as experience was gained Class 2 patients were also deemed to be appropriate risks (Dawson & Reed, 1980; Wong & Pace, 1981).

Now, even many patients in Class 3 are being safely accepted as ambulatory surgery cases (Orkin, 1985; Wetchler, 1987; Staff, 1984, September). A Class 3 patient is one with serious systemic disease but the disease is not incapacitating. To be considered an acceptable risk though, the patient's condition must be stable. This means that the well-controlled insulin-dependent diabetic, the obese patient, the hypertensive patient, and even patients with cardiac conditions may be acceptable risks. Because of the increased probability of postoperative complications

necessitating transfer of these patients, they are not typically accepted in freestanding centers. Because the anesthesiologist or anesthetist is ultimately responsible for sedating and resuscitating the patient, he or she must have final authority in determining the acceptability of a patient for this type of surgery (Wong, 1984, September).

Throughout the military though, standards of practice which must be followed are sometimes more strict than in civilian facilities. Higher headquarters often proscribes certain procedures, and, in this case, Health Services Command has limited ambulatory surgery to those patients in Classes 1 and 2 (HSC, 1986, August 13). The local staff concurred in this policy, feeling that not being in a research or teaching center, there was no reason to push patient selection to the limits, thus incurring needless risk management concerns.

Additional Selection Criteria

A patient who is an acceptable risk for surgery from the perspective of receiving anesthesia may not be an acceptable candidate based on other criteria. Several other patient variables must be considered. According to Wetchler (1987), (a) the patient's personality and attitude, (b) the patient's age,

(c) the extent of laboratory and other diagnostic testing required, and (d) the presence of a responsible person should be considered.

Personality and attitude. It is crucial to patient selection that the patient know and understand what is going to happen, and that they appreciate the seriousness of surgery. Because the patient will go home the same day, there is often a perception that the surgery is minor and not serious. But, because there is so little postoperative supervision and care, the patient must be able to understand and follow instructions just as if hospitalized (Orkin, 1985). The patient must also be willing and motivated to make the surgery work before admission. Wetchler (1987) points out that many ambulatory surgeries are cancelled because the patient failed to follow instructions about not eating or drinking the night before admission.

Additionally, the patient must be psychologically accepting of the procedure. Griffith and McLaughlin (1985) refer to the "hypercritical patient who is obviously unhappy and apprehensive" about having ambulatory surgery instead of inpatient surgery, as "a lawsuit waiting to happen" (p. 36). There is simply no reason to force a patient into something which is personally disagreeable.

Age. The patient's age as a potentially limiting factor is discussed by both Orkin (1985) and Wetchler (1987). Chronological age alone should not be a limiting factor, but rather physiological age, or the ability of the patient to function appropriate to his or her age.

Infants can be successfully operated on in an ambulatory surgery center. However, there are some cautions. High-risk infants are those with anemia, a history of apnea or of aspiration with feeding, and babies born prematurely. These infants need additional care, support, and observation, and therefore should be admitted as inpatients. Ex-premature infants, after 46 weeks postgestational age, can be candidates (Orkin, 1985), but are often delayed until 55 or 60 weeks (Wetchler, 1987).

Children can bring special problems to surgery, but these are usually associated with psychological suitability (often of the parents) rather than medical or physiological suitability. It is necessary to spend time educating the parents and reassuring the patient to relieve the anxiety and prepare the child for the experience. This practice has met with great success, as the children can be rapidly returned to their normal routine and environment (Staff, 1981, July).

The geriatric patient can also be an acceptable candidate for ambulatory surgery. Because the elderly often have multiple medical problems, special care must be taken to identify all medications , prescribed and non-prescribed, which they may be taking. This is especially important because of the increased possibility of drug interactions (Orkin, 1985). Wetchler (1987) advises that the staff take extra time to provide the geriatric patient with the additional reassurance and training they often need. They should be asked to report earlier than usual for their surgery. This will allow additional staff time and help them become more relaxed and improve their understanding of what is expected of them before and after the surgery.

Lab and diagnostic tests and other procedures. The amount and complexity of laboratory and x-ray testing required for a particular case must also be considered. Alexander (1986) indicates excellent success limiting routine tests to only hemoglobin estimation and urinalysis. Preoperative x-rays are no longer considered necessary except based on clinical findings (Bureau of Radiologic Health and Devices, cited in Wetchler, 1987). Great reliance must be placed on the patient's history, which may indicate

what additional testing may be required for that patient (Griffith & McLaughlin, 1985). If the history reveals that extensive testing is required, then the patient is probably not a good candidate, as the amount of time spent performing the tests probably justifies a regular admission.

Two particular tests have been given extra consideration by some writers: pregnancy testing for appropriate age females, and sickle cell anemia testing for black patients. These have been shown to be of value in ruling out patients at higher risk (Orkin, 1985; Wetchler, 1987).

Related to the testing question is the possibility of more extensive surgery occurring after the patient's admission to the unit. If unrelated procedures may need to be accomplished during the same admission, or if testing and diagnostic procedures could reasonably lead to more extensive surgery than originally planned, then the patient is probably not a good candidate (Staff, 1984, September). An example of this would be a biopsy which may be immediately followed by removal of an organ (Staff, 1982). In these situations, it is probably advantageous to admit the patient to an traditional inpatient surgical setting.

Responsible person. A very crucial factor in allowing a patient to have ambulatory surgery is the presence of another responsible adult, who is able to take the patient home and stay with the patient at least until the next day (Staff, 1982, November; Staff, 1984, September; Wetchler, 1987). This is necessary because of the tendency of both intravenous sedation and general anesthesia to impair mental acuity for a substantial time postoperatively (Orkin, 1985). This responsible person must be able to drive, as the patient must not be allowed to operate a vehicle, at least, until the next day. Preadmission discharge planning is essential to educate this responsible person about their responsibilities, including when, how, and where to seek emergency treatment (Griffith & McLaughlin, 1985).

Because of the importance of this requirement, single active duty soldiers living in government barracks are generally not acceptable candidates for ambulatory surgery. Their parent unit is simply not equipped to assure the kind of supervision this surgery requires. While there may occasionally be exceptions, these patients were generally not considered as potential workload in this study.

Conduct of the Preassessment

The preassessment of patients is an important function which pays great benefit to the patient and the organization in terms of quality of care and avoidance of risk management problems. Without a complete assessment, it is possible that some patients could receive unwarranted surgery, and some surgeries could be cancelled due to noncompliance on the part of the patient (Wetchler, 1987).

Ideally, this preassessment should be conducted as a multidisciplinary activity, involving the surgeon, the anesthesiologist or anesthetist, and the nurse (Mauldin, 1984). As there is often little time for staff-patient interaction before ambulatory surgery, it is important that this process be well-organized so that nothing is omitted. Patients have a right to both informed consent and to knowledge about their care plan (Lammers, 1986); the former is the responsibility of the surgeon and anesthesiologist, and the latter is the responsibility of the nursing personnel. To this end, the following guidelines were developed with the RACH staff:

1. Informed consent. Physicians must take responsibility for the initial assessment of the patient when deciding to offer them the option of

ambulatory surgery (Staff, 1984, September). They should, therefore, be acquainted with approved procedures and patient candidate requirements. They must also be prepared to take a thorough and detailed history to evaluate whether or not there is an acceptable risk for the patient in the proposed setting (Griffith & McLaughlin, 1985). This history should provide information as to additional laboratory tests or diagnostic procedures which may be required prior to or in connection with the surgery. It would also enhance the anesthesia staff's ability to evaluate the patient and determine any special anesthesia needs. Strict attention should be paid to the patient's prior surgical experiences, complications, reactions to drugs, and allergies (Griffith & McLaughlin, 1985). Although the surgeon makes the initial selection of the patient, both Wong (1984) and Orkin (1985) feel that the anesthesiologist's role is more crucial, as he or she is ultimately responsible for patient safety during the procedure. Rather than allowing the surgeon to clear a patient for surgery, they advocate the anesthesiologist's position as the "gatekeeper and guardian of the ambulatory surgical setting" (Orkin, 1985, p. 100).

Both the surgeon and anesthesia staff have a responsibility to educate the patient as part of the history-taking. This education is necessary to allow the patient to give a truly informed consent. It cannot be accomplished in the operating room just before the patient is put to sleep, but instead should be accomplished as far in advance as the surgery will allow (Griffith & McLaughlin, 1985). This would provide an opportunity to assess those other criteria discussed above when there is still time to respond if it is felt that the patient is not intellectually or psychologically prepared. It would also provide the staff with a means of reducing stress and assuring cooperation from the patient and family.

2. Nursing care plan. Several studies have documented the effectiveness of preoperative teaching in improving postoperative recovery (Peterson, 1987; Staff, 1985, January; Staff). This teaching is generally considered as a nursing function, and is included as part of the patient care plan. Several checklists of questions to be asked are available; the point of all of them is to determine how much the patient really knows about what is happening, what his or her responsibilities are, and if all required history and lab tests have been completed. The nursing staff often has the last

opportunity to correct misinformation and complete missing information prior to the patient's entering the operating room.

This portion of the preassessment also provides the nurse with the chance to educate the patient about what to wear, when to report, what to eat and drink prior to arrival, duties of the responsible person, and any other items which may have been missed by the physicians (Mauldin, 1984). Any anomalies discovered at this time should be brought to the attention of the surgeon and anesthesia staff, who can then decide if changes are necessary. It is always best if this can be accomplished at least a day prior to surgery, so that last minute problems can be avoided. Many centers then telephone the patient the night before surgery to remind them of details which may have been forgotten and answer questions.

Only after all of the selection criteria have been addressed by the responsible parties, can the patient be declared an acceptable candidate. Even if the patient is only having a minor procedure done under local anesthesia, it is important that all of these patient selection criteria be met to minimize risk for the patient and the facility, and to help assure the

highest quality of care. The approved patient selection criteria is shown at Appendix B.

Patient Flow and Resource Utilization

There are numerous dilemmas to be solved in determining the manner in which patients will be handled in an ambulatory surgery center. There is not a right answer for any of them, as many solutions have been tried and adapted for individual situations, all with success. Effective patient flow is a function of both the facility and the staff, and is crucial to the success of any center (Voss, 1986). At RACH, it was the critical factor in determining whether some patients could be better cared for in other than the routine inpatient surgery setting.

The determination of effective patient flow required evaluation of many different questions related to the problem. Is it possible to admit patients requiring ambulatory surgery to a regular ward, or should they be admitted and discharged in a ward separate from other patients? Where should the surgery be done: in any of the operating rooms, or in a room reserved for ambulatory surgeries? What about treatment or procedure rooms in the clinics? Is it

realistic to recover patients in the existing recovery area, or will some other location be required? Which of the arrangements can RACH realistically staff and support? Both the physical facility and the staffing had to be examined together, because it was very possible that a patient flow judged optimal for the facility could not be supported by care providers.

The intent of this section is not to outline every step of patient flow, and every form filled out to admit, care for, and discharge the patient. Rather, it is to outline the problems associated with handling ambulatory surgery patients as they move through the key parts of their surgical experience, and determine how those problems can be resolved if ambulatory surgery is adopted. Patient flow for ambulatory surgery can be broken into five events: (a) preadmission procedures; (b) admission to a bed; (c) surgery; (d) recovery; and (e) discharge. Each of these areas was examined in terms of both the facility and the staffing necessary to accomplish the function.

Preadmission Procedures

Preadmission deals with all those items necessary for the patient between the time the physician recommends the patient for ambulatory surgery, and the time the patient actually enters the hospital for

surgery. This period of time could cover several days or even weeks, and is important to the success of the actual surgical experience. During this time, the same actions are accomplished as would be required for a regular surgical inpatient, but they are typically done as an outpatient.

1. Patient history. The physician must complete the detailed history on the patient to properly evaluate the patient as a candidate. Physicians must have a good understanding of the patient and procedure selection criteria to complete the physical. The completed physical should then be available to the anesthesia staff for the preanesthesia visit.

2. Preanesthesia visit. The preassessment discussed previously should be completed. This is necessary to obtain clearance of the patient for surgery. While this preassessment can be accomplished on the morning of surgery after the patient is admitted, such a procedure may cause many difficulties. If the patient is ruled out as a candidate for surgery, he or she is likely to be very upset about wasting time and effort in making necessary arrangements to be at the hospital. Cancellation may cause the surgery schedule to be rearranged, which may cause difficulties with physicians' schedules and other patients. Or a worse

possibility is that the anesthesiologist and surgeon may not have adequate time to evaluate various factors, and may go ahead with an operation on a patient, who, on more serious reflection, would not be a good candidate for surgery (Griffith & McLaughlin, 1985). Thus a better procedure for the efficiency of the facility is to conduct the preassessment as far in advance of the surgery as possible.

The authorized anesthesia staff at RACH is already performing these visits for patients currently having inpatient surgery, so if that surgical workload were shifted to an ambulatory surgery basis, no additional requirement would be created. They also have some time available to conduct additional visits in support of ambulatory surgery for work which is brought into the hospital from the clinics. These would have to be conducted in the late afternoon, just as they are with inpatients, so that the current surgery schedule would not be disrupted. Although no specific staffing standard exists for preanesthesia visits, four additional visits could be accommodated for procedures requiring general anesthesia. For procedures involving local anesthesia, with or without intravenous sedation, the availability of anesthesia staff time was not considered a limiting factor. The physician is then

responsible for patient selection and the anesthesiologist or anesthetist is only required on a consulting basis. It was estimated that the few patients requiring consults required five minutes or less.

3. Laboratory tests. Laboratory testing can also be accomplished the morning of the surgery, if the facility is prepared and set up to handle rapid turnaround in the mornings (Staff, 1985, February); but, similar drawbacks exist here as was the case with anesthesia: lab results may cause the patient to be ruled out as a candidate. Thus it is recommended that these tests be completed the day prior to surgery, so that all results can be consolidated and appropriately reviewed prior to surgery.

4. Nursing care plan. The nursing care plan should also be completed prior to the day of surgery. This gives the staff a chance to assure that all necessary actions and tests have been completed. It is also the time to accomplish any remaining patient education, to talk to the responsible person about their duties, and to assure that the patient has truly given an informed consent.

As with anesthesia, the RACH inpatient nursing staff is already doing considerable preoperative

teaching for inpatient surgical cases. Clinic nursing staffs conduct patient education for patients receiving surgery in their clinics. Thus, the only increase in workload would be for any new work which is generated by establishing an ambulatory surgery center.

5. The patient. The patient's role and responsibility in this process can be very confusing. Ambulatory surgery is supposed to be uncomplicated, but the patient often has to make multiple trips to the hospital to complete all of these preadmission requirements. This situation is not conducive to patient satisfaction. It could lead to the omission of essential tests or procedures as there is no central person or office to coordinate pre-surgical workups for the patient. Because of varying schedules in the clinics and normal anxiety, it can be very difficult for the staff and patient to complete all of the required actions.

In seeking to design the optimal patient flow for the preadmission procedures portion of the ambulatory surgical experience, information gathered in the interviews suggested that a slightly different approach be taken. Rather than admitting the patient on the morning of surgery, it would be better to admit them the previous day and accomplish all preadmission

requirements as an inpatient. By admitting the patient the day prior to the surgery, the nursing staff could coordinate patients and activities to assure that all actions would be completed. The existing system for completing these steps could be utilized to simplify the process for the patient. The patient could be admitted in the early afternoon, have the history taken, the preanesthesia visit and lab work done, preoperative teaching and nursing care could be accomplished, and the patient could be released to go home on pass for the night with instructions about what time to return in the morning.

The benefits of this system would be many. The nursing staff would save time over a regular admission because they would not have to attend the patient during the night. They would have control of the patient and could coordinate completion of the various requirements. If anything unusual should be discovered, there would be sufficient time for proper evaluation and adjustment of schedules. There would be a far greater probability that necessary documentation would be included in the patient's chart, than there would be if testing and evaluation were done as an outpatient. The patient would then leave the hospital with instructions fresh in mind, thus, increasing

patient compliance. Patient days are counted for the day of admission and not for the day of discharge, so it would not create any artificial increase in workload, nor would the patient be charged for the extra day. There would still be some patient inconvenience, since they would have to spend two days in the hospital, but they would be spared the difficulty of trying to meet with the surgeon, anesthesiologist, and nursing staff as an outpatient.

This would be the optimal arrangement for the accomplishment of preadmission procedures at this hospital. The surgeon would admit the patient the day prior to surgery and the required history, visits, tests, and instruction would be accomplished after admission. There would be some moderate increase in work for existing staff, if cases not currently being done in the hospital were to be admitted, but no additional staff would be needed.

Admission to a Bed

Having decided when to admit the patient, the problem of where to put them during their stay was then addressed. In many ambulatory surgery settings, a separate ward or service is established, so that the unique needs of these patients can be accommodated. Other hospitals have found, however, that their needs

are best met by integrating the ambulatory surgery patient into the normal patient setting. The project thus proceeded to an evaluation of the current facility and staffing to determine which beds to use for ambulatory patients and which staff would care for them.

1. Current patient care areas. RACH suffers from a serious lack of space. There is no feasible way to create more usable space within the existing facility, without moving activities out. The commander has determined that that is not an acceptable option, as any facilities available from the installation are substandard and scheduled for demolition. It was necessary to look within the existing facility for ways to rearrange space if an ambulatory surgery unit were to be established.

This hospital has two surgical wards and one medical ward which were studied for use with ambulatory surgery patients. Ward 3 West is a 40 bed surgical ward handling general surgery and gynecology patients; Ward 4 West is a 42 bed surgical ward handling orthopedic, urologic, oral surgery, and EENT patients; and Ward 5 West is a 34 bed medical ward handling all medical patients. It has a 6 bed overflow capacity

restricted to minimal care patients such as those with Acute Respiratory Disease Syndrome (ARDS).

These wards were selected for study after discussion with the Chief Nurse. The Newborn Nursery, Obstetrics Ward, Labor and Delivery area, Pediatrics Ward, and the Intensive Care Units were ruled out as possibilities due to specialized equipment and nursing care needs, which precluded moving these functions.

Each ward is designed with a central nursing area, with one hallway on each side, and patient rooms in each hall. There is a waiting area on each floor which serves both wards on the floor. With the exception of those rooms directly across the hall from the nursing station, there is little direct observation of patient rooms. Ward 3 West has two 5-bed rooms; Ward 4 West has two 4-bed rooms and two isolation rooms; Ward 5 West also has two isolation rooms; all other rooms have two beds. If a patient requires isolation and the isolation rooms are full, he or she is placed in a regular room and use of the other bed is lost. If one bed in a room is occupied by a male, then a female cannot be put into the other bed. As both of these circumstances often occur, this contributes significantly to an apparently low occupancy rate.

A statistical analysis was conducted of the bed occupancy on each ward for weekdays during 1986. Weekends and holidays were not included, as no ambulatory surgery would be done then. The detailed results of this study are shown in Appendix C. Current staffing levels and those proposed under the Manpower Staffing Standards System (MS3) were also examined.

2. Proposed ambulatory surgery unit. Initial analysis of the results indicated that Wards 4 West and 5 West were not places to look for excess beds but that they could be used in the process by acting as overflow wards for 3 West. It appeared that at least four beds, and possibly as many as eight, on Ward 3 West could be dedicated to ambulatory surgery patients. This could be done with 2-bed rooms or with one of the 5-bed wards. The number available would depend on how much shifting of patients from 3 West to 4 West or 5 West could be done and how many patients could be accommodated by the staffs in those areas. This was discussed in interviews with the Chief Nurse and the Chief, Clinical Nursing Service. Acuity data and corresponding staffing, as determined by the MS3, were both examined, as well as the actual facility.

In the interviews, the general conclusion stated above was accepted, but with some limitations. Placing

an additional six patients on a ward for ambulatory surgery could end up requiring twelve beds. This is because today's patients may be recovering in a bed at the same time one of tomorrow's patients is being admitted for their preoperative workup. Therefore, beds and admission times must be very carefully managed, to assure that beds are available when needed.

An additional average load of six ambulatory surgery patients could be handled with the available beds on Wards 3 West and 4 West but it would not be appropriate to dedicate or set aside specific rooms for ambulatory surgery. This would decrease the flexibility needed to respond to varying conditions already present as well as those peculiar problems associated with bed management for these patients.

For the same reason, it was felt inappropriate for the ward nursing staff to assign the patient to a bed. Because of the variations in workload between the wards on any given day, several beds on each ward have a limited function as swing beds. That is, if no beds are available on the medical ward, and a medical patient is admitted, the Chief, Clinical Nursing Service has the authority to place that patient on one of the surgical wards. Not available may mean that the bed is empty, but due to the condition of a patient in

the room, the other bed cannot be used. This situation was estimated to occur about 10 to 15 percent of the time, although no records were available for substantiation.

The point was also made by the Chief Nurse and the Chief, Clinical Nursing Service that there are few advantages to be gained in this facility by creating a completely separate ambulatory surgery nursing unit. There are no unused spaces, no closed wards waiting to be put into operation, and none of the typical incentives present which often lie behind a decision to establish a separate unit.

Additionally, physicians in specialty services voiced a concern about having their patients on a ward other than where they would normally be located. Some of this concern was due to a desire for personal convenience, but convenience often translates into efficiency. The discharge process for the surgeon is simplified if his patients are all in one area. Since the Family Practitioners admit patients in many specialties, they tend to have patients on all wards. As a result, this concern was not given great weight by these particular physicians.

It was agreed that patient assignments to beds would be done by the Chief, Clinical Nursing Service so

that bed needs could be balanced. Family Practice patients would primarily be placed on 3 West and the surgical specialties would have patients on their usual ward(s).

3. Staffing. A review of the staffing on all wards was conducted to determine if nursing authorizations could be, or needed to be, moved to meet workload demands. The new MS3 standards were implemented at RACH in May 1987 to determine staffing levels on all wards. Computations were based on April 1986 to March 1987 workload. Former requirements, authorizations, and actual strength, along with the new requirements, are included in Appendix C.

The computations for staffing were duplicated, assuming an increase of eight ambulatory patients per weekday, to determine the additional staffing required. The interviewed nurses agreed that ambulatory surgery patients would most likely fall into category II, with a few in category I, for predicting nursing care hours. Six patients were allocated to 3 West and two patients to 4 West. This resulted in the requirement for four additional nurses on 3 West with one additional nurse being necessary on 4 West. The resulting increase can be met by shifting nurses from those wards which lost requirements with the implementation of MS3, so no

additional staffing would be required to implement ambulatory surgery at that level. The results of the added patients are also shown in Appendix C.

Surgery

The real point of admitting surgical patients is to move them into an operating room, where the surgical procedure can be safely and effectively accomplished. There are several options available to accomplish this which basically revolve around the use and staffing of two areas: the operating rooms, and the clinic treatment rooms.

1. *Operating rooms.* There are five operating rooms in the main operating area, but OR #5 is not functional on a routine basis. Numerous mechanical problems exist, including inadequate utilities. The limited availability of anesthesia staff also prohibits routine use of the fifth room.

Three of the four functioning rooms are scheduled and staffed for all routine surgery. Operating Room #4 is available for any emergency cases which come in while the other three rooms are in use. The three main operating rooms are quite heavily scheduled, generally being in use over six hours a day on weekdays. The use of the fourth room is sporadic, but infrequent.

There are two possible options which could be used in handling the increased ambulatory workload. Some of the possible cases are already being done in the existing schedule. Any additional cases could be added and integrated into the regular schedule. The second option would require dedicating one of the rooms to ambulatory surgery patients and doing them all in that location. Anticipating an overall increase in workload with the addition of ambulatory surgery patients, the second option seemed a more likely solution and, in coordination with the Chief of Anesthesiology, the Chief Anesthetist, and Chief Nurse of the Operating Room, was investigated for feasibility.

Schedules for surgery are generally handled in one of two ways: block scheduling, or first-come, first-served (Voss, 1986). Some operating rooms use a combination of the two. The complexities of trying to match schedules of the ORs, the patients, and the physicians are numerous, and beyond the scope of this paper. The RACH scheduling procedure involves both processes. Certain days are blocked out by specialty, with any unused time then being offered to other specialties. This procedure generally works well in a hospital of this size, as it facilitates both the

physician's scheduling of his outpatient days, and the more efficient use of operating room time.

One issue, which had been mentioned by some physicians, was that inadequate amounts of OR time were being made available to them. This issue was discussed during interviews, but was very difficult to quantify. All of the clinics indicated that they sometimes had to wait to get a patient scheduled for elective inpatient surgery, but from clinic records, it did not appear that the wait usually exceeded two to three weeks. The specialty services did have more of a problem with minor procedures done in the clinic treatment rooms, with these often being scheduled four to five weeks in advance.

In examining the question of the limited availability of OR time, it is important to balance that limitation with the fact that surgeon time is also limited, particularly in a military hospital with a closed staff. If too much OR time is made available, it could be wasted since the number of hours in which surgeons can operate is limited. One significant problem which surgeons must face is balancing their time between surgical cases and outpatient clinics. If they spend too much time in the OR, they could run out of patients on whom to operate; it is the conduct of

the outpatient clinics and the availability of clinic time which brings patients to their care. Some degree of surgical backlog may indicate good practice management. No backlog may indicate that they are not seeing enough outpatients. After reviewing clinic procedures and patient appointments, the backlogs seemed to be as much a result of an insufficient number of physicians as it was lack of time in the OR.

The Chief of the Operating Room Nursing Service agreed that room time would generally be available to meet additional needs if OR #4 were to be used, as would some operating room nurse and staff time. It could require a shift in the workflow, causing emergency surgeries to occasionally be done in room 5, which would be hardly ideal; but this was not felt to be a significant problem as the normal procedure would be to cancel ambulatory surgery if an emergency surgical procedure necessitated use of the room. The Chief of the Operating Room Nursing Service estimated an average procedure time of one-half hour. At current staffing levels, this time, plus the time required to clean and set up a room, would allow five procedures to be scheduled daily.

2. Staffing. In examining both the room utilization and the staffing, though, it became clear that the

difficulty in providing more time was the presence or absence of the anesthesiologist and the nurse anesthetists to handle patients. There are only four anesthetists and one anesthesiologist to handle the workload of the operating rooms. They currently hold preanesthesia visits with all patients, perform all anesthesia functions before, during, and after the surgery, monitor patients in the recovery room, prepare a significant portion of the operative record, and one of them is on call 24 hours a day to support emergency surgery. They could conduct a preanesthesia visit with four additional ambulatory surgery patients a day, requiring about an hour and one-half of their total time. But they cannot handle the additional four to five hours in the operating and recovery rooms which those patients would engender if general or regional anesthesia were used. Current requirements for anesthesia staff are shown in Appendix C.

Seeking a solution to this limitation, an analysis was then conducted of the anesthesia requirements for ambulatory surgery to see if there were some other way to provide the necessary support. Discussion with the anesthesia staff revealed that patients requiring general anesthesia require the most time, preoperatively, during surgery, and postoperatively.

On the other hand, patients receiving local anesthesia require very little, if any, time from the anesthesia staff. With this in mind, it was decided to examine the workload associated with procedures requiring some type of local anesthesia. The advantage of this is that the surgeon can administer the anesthetic agent and monitor the patient. The anesthesia staff indicated that if intravenous sedation is used in conjunction with local anesthesia, a trained nurse would also have to be present during the surgery to monitor the patient. The anesthesiologist or anesthetist need only conduct a brief presurgical review of the case, provide general supervision of cases, and act as an information source for the physician. This concept was presented to and accepted by both the physicians and the anesthesia staff.

It is important to note that monitoring of some kind is always required during surgery (Staff, 1984. April). The patient should be monitored for reactions to the drugs and for behavioral and physiological changes. When receiving sedation along with the local anesthetic, the patient should be connected to an EKG monitor and blood pressure cuff by the physician or nurse. Monitoring must be done in relation to the physiological baseline of the patient, so this

information must be recorded in the chart at the time of admission and before any drugs are given. Nursing staff must have sufficient training to assist the physician in this process.

3. Clinic treatment rooms. These locations may also be appropriate for the performance of ambulatory surgery in selected cases. Each of the four Family Practice clinics has such a room, as do the General Surgery, Urology, Orthopedic, and EENT clinics. These rooms are currently used for many treatment and diagnostic procedures. Patient flow from the wards to the clinics in the hospital for ambulatory surgery would not be any different than already discussed.

These clinics are not staffed to handle a great deal of surgery, however. Because of the above-stated monitoring requirements, it is difficult for the clinics to assure that sufficient nursing personnel are always available to assist with patient monitoring and still meet the requirements of clinic functions. This is particularly evident postoperatively, when the patient may sit in the waiting room and be only occasionally checked. By admitting patients so they can return to a bed on the ward, the clinic nursing staff can be freed of the monitoring requirements associated with postoperative recovery. The surgery

would then not detract from clinic functions as it sometimes does. Thus existing workload could continue to be accomplished in these clinics, with an incentive present to admit these patients so that clinic staff would be more efficiently utilized.

A separate question dealt with the appropriateness of the procedures currently being accomplished in these rooms, and the question of whether some or all of these patients should be admitted. This is a quality assurance issue, and will be discussed later.

Recovery

Recovery of patients is another problematic area in ambulatory surgery. Since patients go home so soon after surgery, it is important that monitoring be well done and accurately documented to clearly indicate when the patient is stable enough to be discharged. Because the surgeries can be very short, it is possible that surgeries could be finished at a faster rate than patient recovery rates, thus resulting in a recovery room with no available beds.

Lack of space for recovery is a serious limitation to the establishment of ambulatory surgery at RACH. The existing recovery area is extremely small and is shared with the Surgical Intensive Care Unit (SICU). Six beds are used by the SICU and four beds are

available for the recovery of surgical patients. However, patients from recovery frequently overflow into the SICU beds. With surgery being done in three ORs and the sometimes lengthy recovery time required for patients under general and regional anesthesia, they simply cannot be moved out of the recovery room as fast as they arrive.

If five additional general anesthesia procedures are done in OR #4 each day, the existing recovery area could be overwhelmed. But, by limiting procedures to those requiring only local anesthesia, with or without intravenous sedation, the recovery time could be significantly reduced. In many cases the patient would be able to skip the recovery room completely and return directly to the ward. Because of the time required to clean and set up the OR between surgeries, the previous patient can usually be moved out of the recovery room and back to the ward, before the next patient comes out of the OR. Thus, at most, one additional bed would be required for the ambulatory surgery patients. By scheduling ambulatory surgery patients at the beginning of the surgery day, it is possible that two cases can be done before the first big case gets out of the other ORs; thus, recovery room beds, that might otherwise be empty, would be effectively utilized.

Surgical patients' release from the recovery room back to the wards is based on a system of postanesthesia recovery (PAR) scoring. This scoring is done by the physician or anesthesia staff following the surgery, and then by the nursing staff in the recovery room. Recovery is often divided into two phases based on the PAR score (Staff, 1984, August). There is also a Phase III recovery, sometimes used for children and the elderly with co-morbid conditions, but this is not generally used at RACH.

Phase I immediately follows surgery: at RACH the patient remains in the recovery room until a PAR score of 7 is reached. The patient is then transferred to a lower level of care and observation begins on the ward for Phase II recovery. The patient remains at this monitoring level until a PAR score of 10 is reached and maintained. This is the minimum level for discharge. If a patient scores 7 or higher immediately after surgery, the recovery room can be skipped completely. This same procedure can be used for ambulatory surgery patients, with no change required.

Staffing in the recovery room will support the addition of ambulatory surgery as described earlier. Three nursing personnel are both required and authorized in the recovery room (MS3 standards have not

yet been applied to the recovery room). Interviews indicated that they could handle the small amount of additional work generated by the presence of one more patient, as long as the patient required only minimal monitoring.

Recovery monitoring requirements for these minimal patients have already been established by the Chief of Anesthesiology. Postoperatively, patients should have vital signs (blood pressure, pulse, and respirations) taken every ten minutes until they are stable and consistent with the patient's age and preanesthesia levels.

Discharge

Discharge procedures in ambulatory surgery must be carefully and explicitly developed to avoid medical and legal problems associated with premature discharge (Griffith, 1986; Griffith & McLaughlin,1985; Orkin, 1985). Some facilities originally based discharges on assigned time periods in each phase of recovery, but current recommendations are that specific standards be developed based on clinical criteria, scoring systems, psychomotor testing, and physician judgement (Wetchler, 1985, July). Criteria were initially taken from the literature review, but many of the requirements were clearly related to patients who had received general

anesthesia. These criteria were discussed with the Chief of Anesthesiology, and were then refined into a list appropriate to the procedures contemplated for RACH. These criteria are shown in Appendix C.

The criteria will be evaluated from the time the patient returns to the ward. Upon arrival from the OR or recovery, the PAR score should be retaken. If it drops below seven again, the patient should be returned to the recovery room. Once the score is above 10 and remains there, the patient may be considered for discharge. When the nursing staff determines that the patient meets the criteria for discharge, they will contact the admitting physician, who will write the discharge order.

During the stay on the ward, either before or after the physician approves discharge, final teaching must be done by the nursing staff. The patient and the responsible person should be informed about possible pain, nausea, vomiting, or other potential problems related to the surgery. Instructions should be given regarding when and where to call in case of problems. A follow-up clinic visit should be scheduled with the physician, if this has not already been done. This teaching time allows the nursing staff to evaluate the competency of the responsible person to physically and

intellectually care for the home needs of the patient. If the responsible person is not present or does not seem capable of handling the situation, the physician should be notified and the patient will not be allowed to leave.

There were no new facility or staffing problems associated with this final step, as it will occur in the same place as the admission actions, and will be done by the existing staff on the wards. As soon as the patient is discharged, the bed can be made available for a new admission for the next day's surgical schedules.

Quality Assurance

As the research for this study progressed, local issues and concerns relating to risk management and quality assurance arose as major factors to be considered. These concerns are discussed here.

It is clear that some procedures and activities in an organization just happen, or develop without the conscious effort and intent of those who are in charge. Sometimes these happenings are good for the organization; but often, they leave managers at all levels shaking their heads in bewilderment, saying:

"How did we ever let that happen?" or, "Who made that decision?" It is interesting that usually no one knows the answer, because in fact, no one consciously made that decision for the organization. Someone did something for someone else sometime; the idea spread until everyone is doing it for anyone all the time.

The author believes that control and prevention of this phenomenon, probably common to all organizations, lies at the root of many quality assurance and risk management efforts. While the preservation of quality patient care is the focus of the efforts, the organization is also trying to protect itself from the unbridled innovation of people and the sometimes dire consequences associated with that innovation. Standards and review mechanisms are established to encourage the oversight of individual performance, to limit the unchecked or unintentional development of new procedures and policies, and to assure that medical practice stays within accepted norms. Such standards have developed by several accrediting agencies, three of which are mentioned here.

The Joint Commission on Accreditation of Hospitals (JCAH) [since renamed The Joint Commission on Accreditation of Healthcare Organizations] has established standards of accepted practice which are

followed and subscribed to by military hospitals. The JCAH has clearly established standards governing ambulatory surgery, which must be applied to any potential implementation here. Because the JCAH originally accredited only institutions associated with hospitals, freestanding ambulatory surgery centers sought accreditation from the Accreditation Association for Ambulatory Health Care (AAAHC). Other efforts in the arena of quality assurance are reflected in the organizing, by plastic surgeons, of the American Association for Accreditation of Ambulatory Plastic Surgery Facilities (AAAAPSF), an agency accrediting plastic surgeons' offices when used for the practice of office-based surgery. Only the standards of the JCAH apply at RACH, so those will be discussed here.

The presence of different accrediting bodies should not be construed as being supportive of different standards, though. Stanley Skillicorn, a prominent authority in quality assurance said, "Why should surgery, because it's being done one place, be monitored less than surgery being done somewhere else?" (quoted in Staff, 1984, March, p. 33). This same basic thought characterizes the JCAH approach to ambulatory surgery; whether the setting is a hospital, freestanding center, or physician's office, quality

assurance measures should be the same, and must be consistent with those applied to traditional inpatients in the facility (Orkin, 1985).

The Accreditation Manual for Hospitals/1987 (JCAH, 1986) clearly outlines the the standards for ambulatory surgery, referring to many of the same standards used in traditional surgery. In the standards on Hospital-Sponsored Ambulatory Care Services, standard HO.3.6 requires that policies and procedures address the following:

1. The type of surgical procedures and locations where they may be performed.
2. The type of anesthesia and locations where each may be provided.
3. Preoperative and postoperative transportation of the patient.
4. Preoperative patient evaluation.
5. Postoperative care to include discharge criteria.

Other standards (HO.4.7, HO.5.4, and HO.6.1) require that standards of care similar to those found in equivalent inpatient hospital functions be used for anesthesia, surgical record keeping, and quality assurance mechanisms in ambulatory cases.

As any possible implementation of ambulatory surgery at RACH would integrate these procedures into existing hospital routines, there was no need to develop a new or different set of monitoring mechanisms for ambulatory surgery. But, in the review of compliance with current standards, it was noted that several potential problems existed. These related directly to the problem of policies developing without the intent or direction of management and the question of what procedures should be permitted in clinic treatment rooms.

Standard HO.3.6.1 requires the facility to establish the types of surgeries that can be done and the location where they may be performed. Standard 3.6.2 establishes the same requirements for the scope of anesthesia services. But, over the years, a growing number of surgical procedures have been moved from the inpatient setting to clinic treatment rooms. This is not necessarily in violation of current standards of care, but few have been specifically addressed by the command at RACH. This has resulted in a recent discovery that several of the treatment rooms were inadequately equipped for the performance of many of the procedures being performed there. The Chief of Anesthesiology evaluated all clinic treatment rooms in

the spring of 1987. He found that essential equipment needed to support the patient was not always present, and staffing was not always available to monitor the patient appropriately. Also, he felt that some of the rooms were far too small, not allowing space for additional personnel to assist with a patient who develops a difficulty. And because of the distances involved, there was concern about how quickly a patient could be moved to the hospital operating area if complications were to arise. All of these conditions were present, primarily in the three outlying clinics.

One anesthesia technique was mentioned in interviews, both by surgeons and by anesthesia personnel, as a source of particular concern in terms of patient safety and quality assurance when doing clinic procedures. This involves the use of local anesthesia with intravenous sedation. Often, the intravenous medication is administered without a proper appreciation of the risk entailed (Wong & Pace, 1981). It is important that patients under local anesthesia receive similar supervision to that which is given to patients under general anesthesia (Dawson & Reed, 1980), although perhaps it does not need to be as intense. The Chief of Anesthesiology concurred with this concept.

Nevertheless, procedures requiring this level of anesthesia support are currently being done in treatment rooms of family practice and specialty clinics. The Chief of Anesthesiology strongly recommended that these procedures be done in a more controlled environment with better monitoring than can be provided in a clinic. The chiefs of the specialty clinics and the Chief of Surgery concurred with this recommendation, and it is included in the feasible solution.

There were two legitimate objections to requiring that these minor surgical procedures be done in an ambulatory surgery center, primarily having to do with the decreased productivity of physicians as they travel from one of the outlying clinics to RACH to perform one or two relatively minor surgeries and then return to their clinics. Two resolutions of this problem were discussed. One was computer-aided scheduling of surgical procedures which can increase the effective utilization of operating rooms and allegedly of surgeons' time (Nathanson, 1984). The other concept was that of block scheduling surgeons' time in the operating room; that is, blocking off one extended period of time, perhaps a morning or afternoon, and having a doctor schedule all of his or her elective

cases during that period (Wong, 1984, September). The latter concept was acceptable to the RACH physicians for immediate implementation as it facilitates their scheduling system and control of their workflow. It has been recommended that the former idea be further explored by the Operating and Anesthesia Service staff and the Automation Management Officer, as such a scheduling system would have implications for the entire service, not just ambulatory surgery.

One additional quality of care concern was voiced in some of the interviews. That dealt with the entire context and circumstances in which some of the family practice physicians were performing surgeries in the clinics. While the credentials process works very well at RACH, and physicians are appropriately credentialed to perform the procedures, those credentials are generally granted based on prior experience in a hospital, where specialty staff are immediately available. Some worries about supervision and appropriate technique were expressed, along with a desire to be able to provide more training to the family physicians by the specialty services. It was, therefore, desirable to more strictly limit the location where some of these procedures could be performed.

Based on all of the above concerns, it was recommended that physicians in outlying family practice clinics not perform any procedures requiring sedation at the clinic, and that some selected procedures, regardless of anesthesia, be brought into the hospital.

Approval of the above criteria for quality assurance in ambulatory surgery is reflected in Appendix D.

Final Surgical Procedure List and Workload Estimate

Procedures

Based on all the information previously gathered and developed, added capacity for inpatient work was determined based on the following limits:

1. Inpatient nursing capability: Without adding any more nursing staff and by using unfilled beds, up to eight patients per day could be handled.

2. Operating room time and staff: Existing staff could do five minor procedures per day by using room #4.

3. Anesthesia staff can handle no more surgical patients, but could provide some assistance to the admitting physician with preanesthesia assessment.

4. The recovery room could handle six to eight additional patients, if they do not receive general anesthesia and the recovery room stay is anticipated to be less than 30 minutes.

The available capacity was thus determined to be at least five patients and as high as eight patients, but only if those patients did not require general anesthesia.

Based on the interviews and several discussions with department and service chiefs, the following list of procedures to be done at RACH on an ambulatory surgery basis was submitted and was subsequently approved by the Deputy Commander for Clinical Services. All patients requiring these surgical procedures should be admitted to the hospital the day prior to surgery, with the surgery being scheduled for an approved location outlined below.

1. All vasectomies.

2. Endometrial biopsies requiring intravenous sedation.

3. Selected oral surgery patients requiring intravenous sedation, depending on patient needs.

4. Endoscopies requiring intravenous sedation.

5. Selected genito-urinary procedures, based on physician skills, patient needs and appropriate supervision.

6. Selected ENT procedures.

6. Any other procedure from the list in Appendix A when performed with parenteral sedation.

7. Any procedure from the list in Appendix A using local anesthesia if the physician feels that patient safety or comfort would be enhanced.

Locations

The locations approved for these procedures were as follows:

1. Operating Room #4. This is the location of choice for all ambulatory surgery procedures. Five procedures a day may be done in this room with current staffing. These will be block scheduled by physician with unused time being available to all physicians.

2. Surgical clinic treatment room for general surgery and urology procedures. Procedures requiring intravenous sedation will only be done when the clinic can provide the staff to monitor the patient during the surgery.

3. Hospital family practice clinic treatment room. All family practitioners may use this room for the above-listed procedures when the room is available.

However, the room of choice for them is OR #4. Procedures with intravenous sedation will only be done when the clinic can provide the staff to monitor the patient during surgery.

4. SICU. This area will be used for all endoscopies requiring intravenous sedation.

5. Dental Clinic #2 oral surgery room. This room is only for the use of oral surgeons.

Workload Estimates

1. Constraints. Omitting weekends, holidays, and holiday-like days (day after Thanksgiving, Christmas break period, etc.) there are 240 days a year available for routine surgery. The constraint on nursing staff and available beds allows eight patients per day, thus giving a possible increase of 1920 admissions per year. To achieve this, all five openings in OR #4 would have to be used each day, as well as three additional clinic procedures. Due to ever-present inefficiencies in the scheduling and processing of patients, it is doubtful that this figure would be reached, but it does represent the upper limit of probability.

2. Estimates. Workload estimates for these procedures were developed during the interviews. Estimating the number of specific procedures turned out to be almost impossible, because the clinics kept no records on the

number of specific procedures performed. Information was available through the appointment system about the number of minor surgeries, but there was no feasible method to determine the quantity of each different type of procedure. An audit of clinic records would have been required to determine this with any degree of certitude. Even then, the record may not have provided the clinical detail necessary to make a determination. Physicians were therefore asked to estimate the number of the procedures listed above which they had performed in their clinic during the last year.

While not extremely precise, this procedure provided a reasonable estimate for this work. The summarized totals are shown below:

Procedure	Quantity
Vasectomy	276
Endometrial biopsy	89
Endoscopy	93
Procedures with parenteral sedation	52
Oral surgery	60
GU procedures	90
ENT procedures	75
Other procedures	120
TOTAL	855

The number of procedures was then compared with the capacity developed previously to verify that the number of procedures could be done within the constraints. This was clearly not a problem. Approval of this final list and the workload estimate is shown in Appendix E.

Impact Analysis

Impact was measured by several standard yardsticks used at HSC to monitor productivity. Most important were Total MCCUs and Total Supply Dollars. Also examined were productivity ratios: Medical Care Supply Cost Per MCCU, Medical Care Cost Per MCCU, Medical Care Personnel Staffing Ratio, Average Length of Patient Stay, and Hospitalization Cost Per Occupied Bed Day. One additional indicator, Hospitalization Cost per Admission was also examined.

The estimated workload of 855 procedures was used in recreating these yardsticks, comparing the actual with the "what might have been". The projection was based on the addition of 855 admissions with one corresponding bed day for each admission. These 855 procedures are now counted as clinic visits, so the same amount was deducted from that figure. The

development of all projected workload, cost, and productivity ratios is shown in Appendix F.

Fiscal year 1986 data was used because of problems in the Army finance and accounting system, which prevented reasonable use of 1987 data. Two full quarters of financial data were lost, so the quarterly review and analysis of funds from which this impact analysis was developed, was not done.

As implementation will result in a shift of workload from outpatient to inpatient, no additional costs were considered in the total cost of supplies, since the supplies used in a procedure should not vary by location. Medical care cost should also not be affected, as it is a rollup of total inpatient and outpatient costs. Since implementation can be done at no additional cost in people, average personnel strength should also not change.

But the hospitalization cost and ambulatory clinic visit cost had to be changed to adjust for the shift in workload, as these are subsets of the above indicators. The personnel expense and other portions of those costs would remain constant except the supply cost of the ambulatory surgeries, which would shift from inpatient to outpatient. The cost of supplies for a typical vasectomy, endometrial biopsy, and oral surgery was

developed and extrapolated to all 855 procedures. The development of this cost is shown in Appendix F.

The actual value and the results of these manipulations is shown below:

Indicator	Actual	Predicted
Total MCCU	322,660	331,809
Supply Funds Earned	$5,369,062	$5,521,302
Supply cost/MCCU	$16.79	$16.32
Medical Care Cost/MCCU	$95.82	$93.18
Personnel/100 MCCU	99	96
Length of Stay (days)	4.1	3.85
Cost/Bed Day	$109.52	$107.99
Cost/Admission	$448.35	$416.07
Cost/Clinic Visit	$18.35	$18.32

In all cases, efficiency, as measured by these standard HSC indicators, would improve.

One of the identified questions prompting the study, was the impact shifting workload would have on the revenue, or funds provided by HSC. In 1986, RACH earned $16.64 in supply dollars for each MCCU produced. The additional 9,149 MCCU's produced by ambulatory surgery would have earned an additional $152,239.36 in supply money to meet the needs of daily operation. This represents a 2.8 percent increase in available funds. No other funds are directly linked to workload

in that fashion, so whether other funds would also have increased is a matter of conjecture.

Recognizing that not all surgeries would be shifted to a same-day basis as described, and in an effort to reduce the risk of overstating any improvement, a sensitivity analysis was done to assure that any conclusions drawn would not change if the workload estimate were grossly overstated or costs grossly understated. In this analysis, estimated procedures were reduced by 50 per cent to 442, and supply costs were increased by 100%. This analysis, shown in Appendix F, caused no changes in the conclusions.

Chapter III - Conclusions

Primary Conclusion

The primary conclusion of this paper related to the Statement of the Problem, is that ambulatory surgery is the best format in which to provide surgery to selected cases or categories of patients at Reynolds Army Community Hospital. This conclusion is supported by the following conclusions related to each of the objectives of the study.

1. Surgical procedure selection. A large list of procedures currently being accomplished at RACH was approved by physicians as being appropriate for ambulatory surgery. These procedures are widely accepted, and are not considered as unusual or risky in an ambulatory setting.

2. Patient selection. Surgery is currently being done on many patients who are excellent candidates to have their surgery performed in an ambulatory setting.

3. Patient flow and resource utilization. The physical plant and personnel resources necessary to support ambulatory surgery are available. Ambulatory surgical patients can be appropriately handled in the current facility without additional staffing or modifications. Some changes in the routine mode of

business will be necessitated, but these are possible without using additional resources.

4. Quality assurance. Quality of care for these patients, on average, will improve. From a risk management perspective, many patients would be cared for in a safer situation than what is currently in use. Improved monitoring during surgery and prior to discharge will make the procedure safer.

5. Final surgical procedure list and workload estimate. The limited number of procedures finally selected for current implementation will allow for close monitoring of the success of this program. It also will keep the estimated number of cases at a level commensurate with the resources of the hospital.

6. Impact analysis. Total costs to the hospital will not change, as patients will be shifted from an outpatient to an inpatient basis. However, supply revenue tied directly to workload would see a significant improvement.

Thus, many benefits are possible for both the patient and the hospital. Patients can stay a shorter time, returning quickly to their families. The hospital can have additional funds available to improve other aspects of patient care and the working environment.

Other Conclusions

Some other conclusions indirectly related to the study should also be mentioned for future use by the staff of RACH. First, ambulatory surgery appears to have a far greater acceptance in the civilian sector than in the military. This is, in part, due to the financial pressures facing the civilian medical community which are only starting to be experienced by military hospitals. It may also be related to a financial incentive of the physician to do more cases, something made possible in ambulatory surgery, as the surgeon has fewer patients to see on hospital rounds.

Another reason for the popularity of ambulatory surgery in the civilian sector is the rapid growth and easier adoption of technological advances. Many surgeons have clearly been seeking better ways of doing surgery, ways that are easier on the patient, quicker, and safer. This is seen in the widespread use of lasers for surgery. As reflected in the literature, the use of various types of lasers in surgery is significantly reducing the length of time required to perform a procedure, thus reducing exposure to anesthesia. There is less trauma associated with the surgery and post-surgical healing is aided. And yet, in the military, lasers are seldom-used (there are none

at RACH), and are reserved primarily for the large medical centers. This is largely due to the funding process and the limited control which individual activities have over equipment expenditures.

A related conclusion deals with the reputed conservatism of the military bureaucracy. It has been alleged by various detractors of the military that the services have become reluctant to try new things, unwilling to experiment with new procedures, and far too willing to accept the status quo. Whether this condition exists across the spectrum of military health care is certainly beyond this project. But it was rather obvious that there is a definite unwillingness, at least at RACH, to try approaches to medical care which differ greatly from the accepted military pattern. Many physicians were relatively unacquainted with the great increase in ambulatory surgery, and the many procedures now being done in the civil sector. When shown the list of potential procedures, many physicians were quite surprised to see operations which they typically thought of as only inpatient procedures. To their credit, these physicians were very open-minded about the possibilities same-day surgery could offer patients, and indicated a willingness to explore expanded use of same-day surgery.

Another conclusion, drawn from the literature review, was that computer resources available to support patient care delivery in the military are far less than in the civilian world, to the detriment of good management. Literature references were found which listed computer applications in support of virtually every aspect of surgical delivery. This support was essential, both to better patient care and to improved management. Much of this will allegedly be resolved with the fielding of the new Composite Health Care System (CHCS). It remains to be seen if the military will catch up or only maintain their distant status.

Chapter IV - Implementation and Recommendations

The recommendation of this study was to adopt ambulatory surgery as the technique of choice for patients meeting the criteria outlined earlier. This recommendation was presented to the Deputy Commander for Administration, the Deputy Commander for Clinical Services, and the Commander. All agreed with the recommendation.

Working with members of the Clinical Support Division, a MEDDAC Memorandum was published which outlined the policies and procedures. This memorandum was approved and published. A copy is at Appendix G.

Other associated recommendations were also made. These had to do with future directions to be taken by RACH and were intended to be advisory in nature to future members of the staff. They were also related to some of the objectives of the study.

The procedure list at Appendix A is likely to be out-of-date soon, because procedures are constantly being added. But it should be retained for reference as a starting point for any expansion of ambulatory surgery.

Improved technology in surgical procedures and patient care are constantly expanding the scope of ambulatory surgery and increasing the number of

appropriate candidates. RACH should rapidly move to adopt these technologies and procedures whenever financial resources are available. Of particular importance is the increasing use of various lasers in surgeries of all types.

As physicians become more comfortable with the concept of ambulatory surgery and as financial incentives change, RACH should be prepared to radically change the emphasis on extensive inpatient nursing for surgical patients. Space and personnel are available to convert an entire ward to an ambulatory surgery ward in both the present hospital and in the new one under construction. Currently, the incentives are not present in the resource system to encourage this, but, this situation is changing quickly. If RACH is not prepared to shift into this mode as fully as possible, the hospital will find itself far behind the mainstream of American medicine in its approach to surgery.

To meet the future challenges of resource constraints and civil sector change, the Department of Nursing must be willing to restructure and redefine its role. There must be a willingness to shift resources into the ambulatory care sector and avoid the high concentration of personnel and efforts associated with extended inpatient care.

Physicians need to similarly reorient themselves toward the ambulatory scene. They should remain flexible enough to accommodate these changes, and avoid the mind-set about the hospital as a place to put every patient for extended nursing care and overnight stays.

And finally, the hospital itself needs to redefine its role. We must stop thinking of ourselves as the big building with all the beds in which we put patients. We must start thinking of ourselves as the community healthcare coordinator, matching patient needs with efficient, quality care, and using our beds only when we are certain that no other better alternative exists. As the many changes occurring in healthcare delivery attest, innovators throughout the country are looking for better ways to do business. The military healthcare system is no different and must join in these efforts.

Author's Note

Since leaving Reynolds Army Community Hospital and taking my new assignment at Dugway Proving Ground in Utah, I have continued to follow the growth of ambulatory surgery. It was mentioned in the study that Salt Lake City, Utah, was one of the most progressive areas in the country in changing to ambulatory surgery. At a meeting of Utah hospital administrators in March 1988, I discussed this with several administrators from Salt Lake City. They indicated that over 60% of all surgical procedures in that area are now done on an ambulatory basis. Several hospitals are approaching 70%. This far outpaces any of the predictions I found in the literature search. They informed me that a similar circumstance prevails in Phoenix. This was attributed to a generally higher level of health in the population, allowing a larger percentage of the population to meet their patient selection criteria. They also feel that they have very progressive medical staffs, with an understanding of the economic incentives supporting the shift to ambulatory care.

They are also confronted with a nursing shortage, as many other hospitals in the country are, but are able to respond with far less difficulty than if they had not made such a shift into ambulatory surgery.

Appendix A

List of Possible Ambulatory Surgical Procedures

This list was developed through a literature review and interviews with physicians at RACH. It represents the list of procedures which could be done in an ambulatory surgery center at RACH if such a center were set up.

EAR, NOSE, THROAT

- Adenoidectomy
- Antral puncture
- Antral window
- Arch bars, removal and placement
- Branchial arch appendages, excision
- Bronchoscopy (Rigid)
- Caldwell-Luc operation
- Cervical node biopsy
- Closed reduction (nose or zygoma)
- Closed reduction, zygomatic arch
- Dacrocystorhinostomy
- Endoscopy, diagnostic and therapeutic
- Esophagoscopy
- Esophagus biopsy
- EUA
- Excision of aural polyps

Foreign body removal (ear)

Frenotomy

Frenulectomy, tongue

Inclusion cyst, excision

Inferior turbinate resection

Laryngoscopy

Laryngoscopy with operative procedure

Laryngeal polypectomy

Lip, wedge resection

Mouth biopsy

Myringoplasty or tympanoplasty

Myringotomy with or without tubes

Nasal polypectomy

Otoscopy

Palate biopsy

Polyethylene tubes, removal

Preauricular cyst excision

Removal of PE Tubes

Septal reconstruction, SMR septoplasty

Septorhinoplasty

Small scar revision, head & neck

Stapedectomy

Submucous resection

Superficial lesion excision

Temporal artery, biopsy

Tongue biopsy

Tonsillar tag excision

Tonsillectomy, with or without adenoidectomy

Tympanoplasty

Z-plasty

EYE

Aspiration of aqueous

Blepharoplasty

Cataract removal

Chalazion, removal

Conjunctiva, repair

Conjunctiva or cornea biopsy

Cryopexy for retinal tear

Curettage or cauterization, corneal ulcer

Cyclocryotherapy

Cyst excision

EUA

Ectropion, repair

Entropion, repair

Eye examination

Eye muscle operation, recession or resection

unilateral

bilateral

Eyebrow, dermoid cyst, excision

Hordiolum

Iridectomy

Lacrimal duct, probing

Lacrimal duct, reconstruction

Myotomy, recession or resection

Photocoagulation

Pterygium, removal

Ptosis procedures

Secondary insertion of intraocular lens

Tension measurement in children

Therapeutic retrobulbar injections

GENERAL SURGERY

Anal fistula, excision

Baker's cyst, excision

Breast biopsy, 2 stage

Breast mass, excision

Bronchoscopy

with operative procedure

Cervical node biopsy

Debridement of wound, infection, or burn

Debridement of chest wall site

Endoscopy, small intestine

Epigastric herniorrhaphy

with operative procedure

Esophogeal dilation

Esophogoscopy

Fistulectomy

Fistulotomy, subcutaneous

Foreign body removal

Ganglionectomy

Gastroscopy

Gynecomastia, excision

Hemangioma, removal

Incision & drainage, skin & subcutaneous tissue

Inguinal herniorrhaphy

- unilateral
- bilateral

Lacerations, repair

Lipoma, excision

Liver biopsy

Lymph biopsy

Melanoma, excision

Muscle biopsy

Node biopsy

Pilonidal cyst, excision

Rectal biopsy

Rectal dilation

Rectal polypectomy

Removal of sternal wires or other appliance

Sebaceous cyst excision

Sigmoidoscopy, all types

Skin lesion, excision

Stitch granuloma, removal

Thyroglossal duct cyst, excision

Umbilical herniorrhaphy

Umbilical sinus, excision

Venectomy

Ventral hernia

GYNECOLOGIC

Adhesions of clitoris, release

Cervical polypectomy

Condylomata acuminata, removal or fulguration

Culdocentesis

Dilatation and Curettage

Endometrial biopsy

Hymenotomy

IUD, removal

Labial lesion, excision

Perineum biopsy

Perineoplasty

Vaginal cyst, cautery

Vaginal web, excision

ORTHOPEDIC

Arthrodesis of phalanges

Arthroscopy

Bone biopsy

Bunionectomy

Bursectomy

Carpal tunnel decompression

Fasciectomy of finger

Fasciotomy

Foreign body excision

Fusion

Ganglionectomy

Hammertoe repair

Hardware removal

Manipulation of shoulder, knee, or hip

Mass excision with scar revision

Meniscectomy (if done through arthroscopy)

Metatarsal head, excision

- unilateral
- bilateral

Morton's neuroma

Nerve repair of finger

Neurolysis

- finger
- other

Neuroma, removal

finger

other

Olecranon bursa, excision

Phalangectomy

Plantar wart, excision

Skin graft, 45 minutes

Synovial biopsy

Tendon repair

Tendon sheath, release

Tenosynovectomy

Tenotomy

Toenail, removal

Trigger finger, release

PODIATRY (same procedures as orthopedics with the following additions involving feet)

Arthroplasty of phalanges

Capsulectomy

Cast application or change

Corn removal

Debridement

Exostosis, excision

Fracture, open reduction

Ligament repair

Muscle biopsy

Plantar wart, excision

Synovectomy

Tarsorraphy

Toenail removal

Z-plasty

PLASTIC SURGERY

Basal cell cancer, excision

Blepharoplasty

upper or lower bilateral

combined

Brow lift (coronal)

Cheiloplasty

Chemical peel

Chin augmentation

Cyst excision

Dermabrasion

partial

full

Face lift, partial (2 hr)

Facial wire, removal

Flap revision

Hair transplant

Lesion excision with graft

Lipectomy (suction)

Minor procedures on children

Otoplasty

Rhinoplasty

Rhytidectomy

with blepharoplasty

Scar revision

Skin graft

Suture removal on children

UROLOGIC

Circumcision

Cystoscopy

Cystometrogram

Fulguration of penile warts

Hydrocelectomy

Litholapaxy

Meatotomy

Orchiectomy

Orchiopexy

Perineal needle biopsy (prostate)

Stone manipulation

Testicular biopsy

Testicular prosthesis insertion

Urethral dilation

Varicocelectomy

Vasectomy

Vasovasotomy

ORAL SURGERY

Biopsy

Closed reduction of facial fractures

Complicated exodontia

Cystectomy

Dental restorations

Dislocated mandible, relocation

Examination under anesthesia

Exostosis excision

Fistula closure

Gingivectomy

Hardware removal

Impacted wisdom teeth, removal

two or less

more than two

Impacted supernumerary teeth, removal

Mandibular joint manipulation

Multiple teeth extractions

Odontectomy, full or partial

Operative dentistry

Osteotomy, minor

Periodontal surgery

Placement of dental arches

Removal of odontogenic & nonodontogenic lesions

Tumor removal, soft tissue

BLOCKS

Caudal

Celiac (splanchnic)

Intercostal

Lumbar sympathetic

Roentgenography with block

Stellate

OTHER PROCEDURES

Injection/infusion of chemotherapeutic substance

Injection/infusion other therapeutic substance

Transfusion of packed cells

Intravenous pyelogram

CT scan of head

Other CT

Diagnostic ultrasound

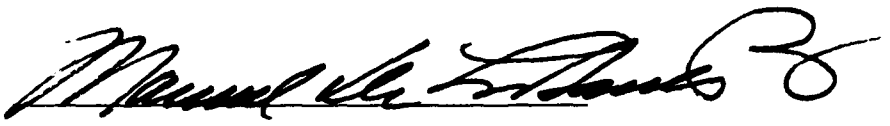
Spinal blood patch

Bone scan

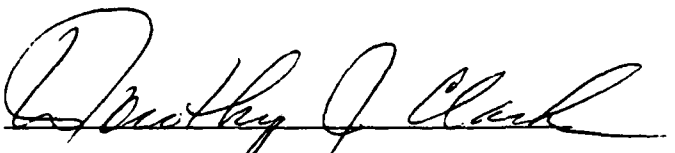
Thoracentesis

Spinal tap

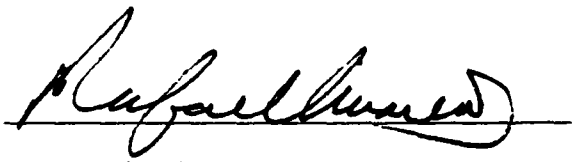
Approvals:



LTC Manuel T. De Los Santos, Chief, Department of Surgery



COL Dorothy J. Clark, Chief, Department of Nursing



COL Rafael Linares, Deputy Commander for Clinical Services

Appendix B

Patient Selection Criteria and Considerations

Patients selected for ambulatory surgery must meet the following criteria:

I. Procedure selection.

A. Only elective, non-emergency cases from the approved list should be done, normally with only one procedure being performed.

B. Select cases in which the procedure required is anticipated to be simple and of short duration.

C. The procedure should have a low incidence of postoperative complications.

D. Patients requiring diagnostic procedures which will probably be followed by a more extensive surgical procedure, should be handled as an inpatient.

II. ASA Class 1 or 2.

A. Class must be determined by the surgeon and anesthesia staff.

B. Classification is based on a thorough history.

III. Patient personality and attitude.

A. The patient is positively disposed toward ambulatory surgery.

B. The patient (or responsible person in the case of infants) is able and willing to follow instructions.

IV. Age limits.

A. Physiological age is the determinant.

B. Infants over 60 weeks are eligible.

C. There is no upper age limit.

V. Laboratory testing and other procedures.

A. CBC one day prior to surgery must be within normal limits.

B. Pregnancy should be ruled out.

C. Baseline blood pressure, pulse, respirations must be determined at time of admission.

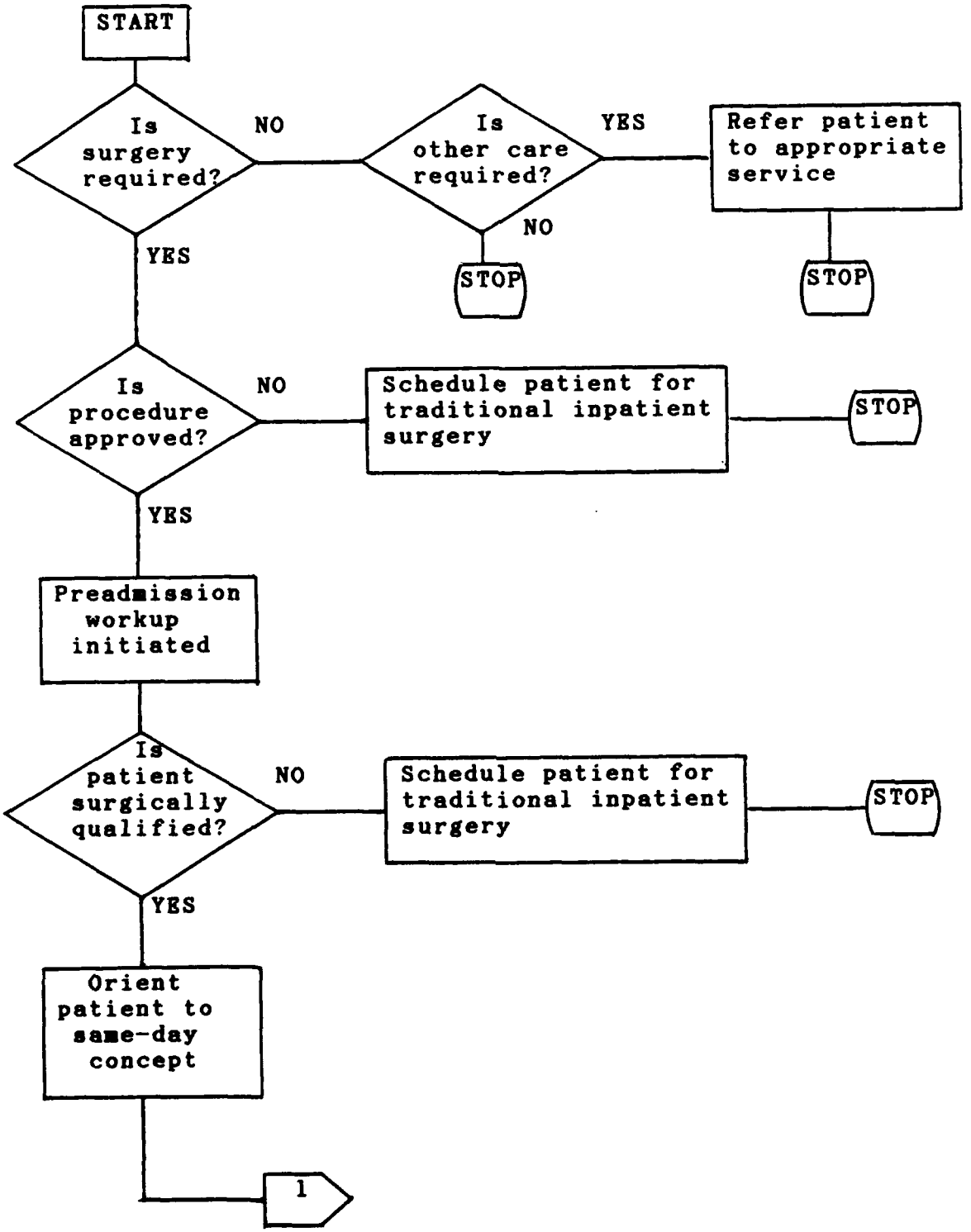
VI. Responsible person.

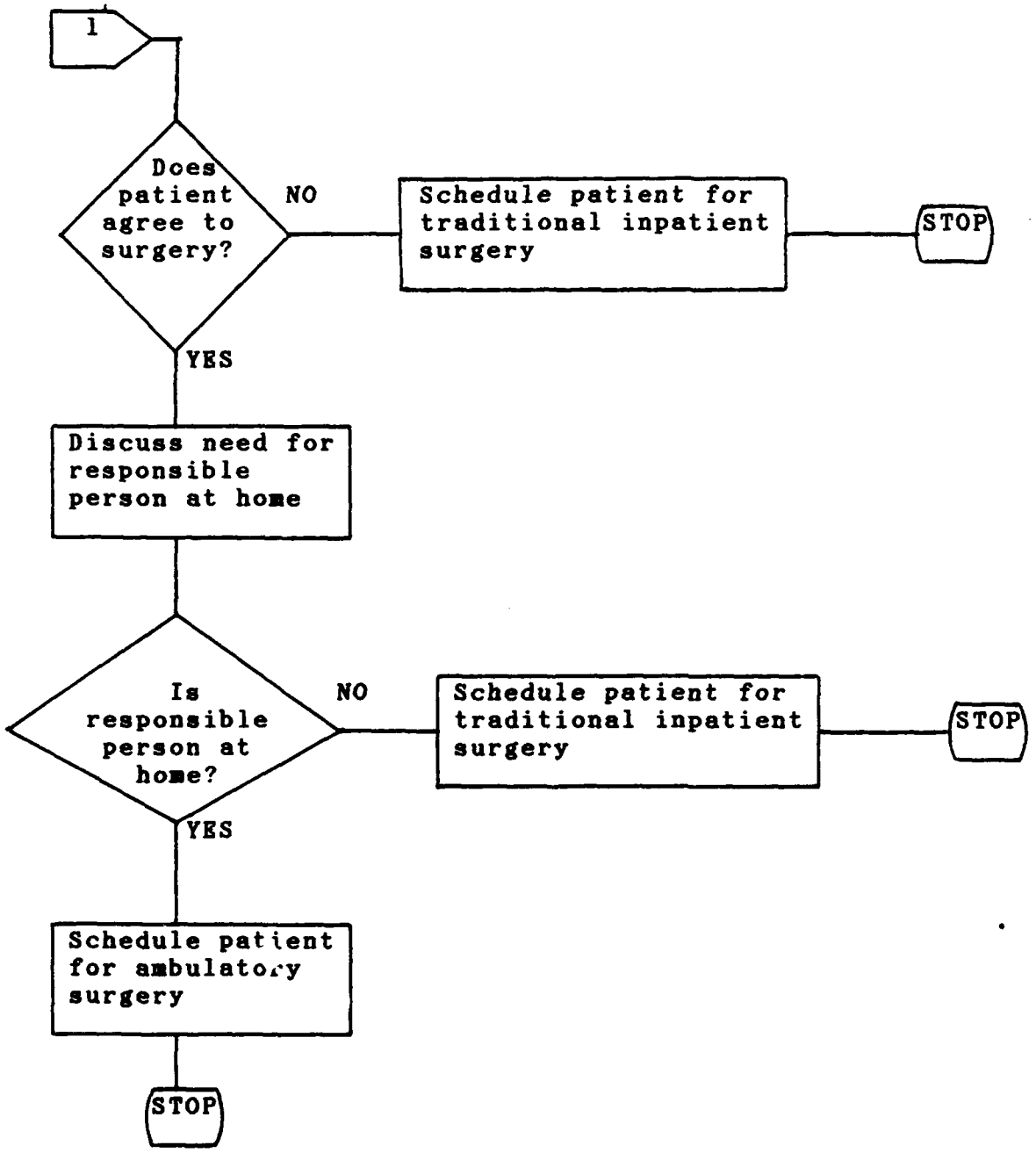
A. Must be able and willing to follow instructions.

B. Must have a driver's license and be able to transport the patient home after surgery.

C. Must remain with the patient overnight.

Flowchart for Patient Qualification





This flowchart was adapted from one used in a teaching mimeo at the Academy of Health Sciences, Fort Sam Houston, Texas. Mimeo # M 14-400-100-5 064.

Approvals:

LTC Manuel T. De Los Santos, Chairman, Department of Surgery Quality Assurance Committee

For MAJ Vaughn J Wittry, Chairman, Department of Medicine Quality Assurance Committee

For COL Dorothy J. Clark, Chairman, Department of Nursing Quality Assurance Committee

COL Rafael Linares, Chairman, MEDDAC Quality Assurance Committee

Appendix C

Requirements to Support Patient Flow

During an ambulatory surgery experience the patient goes through five key areas or functions: preadmission, admission, surgery, recovery, and discharge. This appendix outlines the development of facility and staffing requirements to support the patient in these areas.

Ward Occupancy Information - 1986

	3 West	4 West	5 West
Available Beds	40	42	40
Mean Occupancy	21.7	29.5	29.5
Occupancy Rate	54%	70%	74%
High	36	42	38
Std. Deviation	5.2	5.1	3.7
Mean plus 2 S.D.	32.1	39.7	36.9
Mean Plus 3 S.D.	37.3	44.8	40.6

A frequency distribution was also created for each ward:

Beds Occupied	Occurrences by Ward		
	3 West	4 West	5 West
9-12	8	0	0
13-16	35	2	1
17-20	60	11	2
21-24	63	20	19
25-28	52	71	68
29-32	17	68	100
33-36	5	48	48
37-40	0	18	2
41-44	0	2	0

Occupancy was examined at both two and three standard deviations from the mean. Even at three standard deviations (99% of occurrences) two beds should be available on 3 West. On 95% of the days 3 West should have at least seven beds available. This is amply supported in the frequency distribution. For this reason 3 West was selected as the primary ward for ambulatory surgery patients.

Staffing Information

1. Anesthesia staffing:

	Required	Authorized	Actual
Anesthesiologist	1	0	1
Anesthetist	6	4	4

Because of the low staffing in anesthesia, there is little available time for any significant increase in the number of surgical procedures requiring their presence to care for the patient.

2. Operating Room Staffing:

	Required	Authorized	Actual
Registered Nurse	8	7	7
OR Technician	13	11	11
Nurse Assistant	1	1	1

Based on current staffing, five hours of OR staff time can be made available to staff OR #4. Estimating one hour for each procedure, including set-up and clean-up, five procedures per day, Monday through Friday, could be done.

3. Recovery Room Staffing:

Required	Authorized	Actual
3	3	*

* Actual staffing for the recovery room is not shown because of the intermingling of staff with the SICU. Current strength for both areas is 17, compared to an authorized strength of 19.

4. Current nurse staffing on wards at RACH:

	Required	Authorized	Actual
3 West	23	19	23
4 West	25	20	25
5 West	29	26	30
Obstetrics	15	12	12
Newborn	17	15	15
Pediatrics	17	15	15
MICU	20	20	18
SICU	17	17	15
TOTAL	163	144	153

Actual strength exceeds authorized because of the utilization of nursing personnel from the 47th Field Hospital at Fort Sill.

Under implementation of MS3, several wards had a change in requirements. These new requirements are predictive of the number of personnel required to care for patients of the severity level typically present on the ward. Compared with the new requirements some of the wards now have either an excess or shortage of actual personnel. Those excesses and shortages (created by comparing the new requirements with the current actual staffing) are now subject to realignment and are shown in the table below:

	New Requirement	Actual Staffing	Excess (+) Shortage (-)
3 West	21	23	+2
4 West	26	25	-1
Pediatrics	13	15	+2
MICU	15	18	+3
NET AVAILABLE			+6

Interviews with the nursing staff indicated that ambulatory surgery patients will be graded at acuity level II in nearly all cases. By redistributing the five of the six excess personnel, four to 3 West and one to 4 West, eight additional patients can be handled on surgical days. Patients can be distributed in two

ways: six on 3 West and two on 4 West; or five on 3 West and three on 4 West.

Ambulatory surgery can thus be implemented with no additional staffing cost above current levels. Current authorizations and use of 47th Field Hospital personnel are not anticipated to change through the end of fiscal year 1988, providing some measure of stability. If authorizations were reduced in fiscal year 1989 because of the loss of requirements, then continuation of ambulatory surgery could require additional funds. However, if ambulatory surgery can be implemented now, the requirements could be increased, reducing the likelihood that funded staffing will be reduced.

Discharge Criteria

The following discharge criteria can be applied to any patient having any type of ambulatory surgery or anesthesia (Orkin, 1985; Wetchler, 1985, July). Because of the limited scope of the implementation here, not all of these are currently necessary. Those items selected for use at RACH are indicated by an asterisk (*).

Prior to discharge, the patient must demonstrate the following:

*1. PAR score of 10 or more must be maintained for thirty minutes.

*2. Must be able to ambulate without assistance consistent with preanesthesia ability.

*3. Able to swallow and retain fluids.

*4. Complete orientation as to person, time, and place.

*5. No postoperative surgical problems, such as severe pain, bleeding, or respiratory distress.

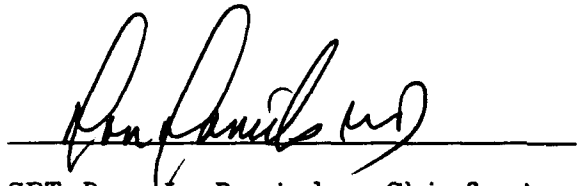
6. Vital signs should be consistent with the patient's age and preanesthesia levels, and should be stable for at least 30 minutes.

7. Swallow, cough, and gag reflexes must be present.

8. Minimal dizziness.

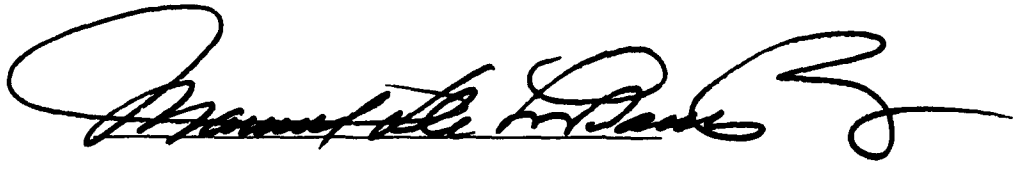
*9. The presence of a responsible person, with a car and driver's license.

Approvals:

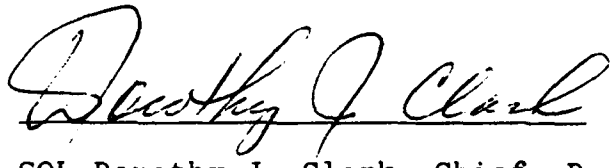


CPT Don J. Daniels, Chief, Anesthesiology and Operative Service

MAJ Maureen Mullins, Chief, Operating Room Nursing Section



LTC Manuel T. De Los Santos, Chief, Department of Surgery



COL Dorothy J. Clark, Chief, Department of Nursing

COL Rafael Linares, Deputy Commander for Clinical Services

Appendix D

Quality Assurance Issues

Quality assurance issues associated with ambulatory surgery were discussed in Chapter 2. No new or different plan needs to be devised, as the same standards are in existence for ambulatory surgery as for inpatient surgery. But some local written procedures and quality assurance plans may need to be updated to reflect the presence of an ambulatory surgery program.

Approvals:

Deborah Gatlin, DAC, Quality Assurance Coordinator

COL Rafael Linares, Deputy Commander for Clinical Services

Appendix E

Workload Estimate

After consultation with the Deputy Commander for Clinical Services, the following list of procedures was selected to be performed as Ambulatory Surgery.

1. All vasectomies.
2. Endometrial biopsies requiring intravenous sedation.
3. Selected oral surgery patients requiring intravenous sedation, depending on patient needs.
4. Endoscopies requiring intravenous sedation.
5. Selected genito-urinary procedures, based on physician skills, patient needs and appropriate supervision.
6. Selected ENT procedures.
6. Any other procedure from the list in Appendix A when performed with parenteral sedation.
7. Any procedure from the list in Appendix A using local anesthesia if the physician feels that patient safety or comfort would be enhanced.

Workload estimates in each of the selected surgical procedures were obtained from each of the Clinic Chiefs where selected procedures were being done. Estimates for each clinic are shown on the next page.

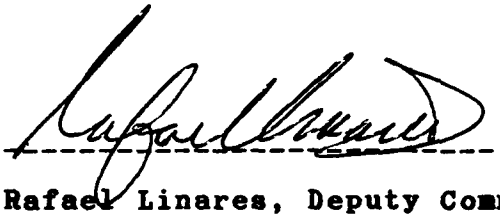
			WORKLOAD ESTIMATE					
Procedure	TOTAL	Craig	Kohler	Harrison	Main	ENT	DC #2	Surg	Urology
Vasectomy	276	42	54	24	60				96
Endometrial Biopsy	89	30	18	5	36				
Endoscopy	93	7	20	12	30			24	
Parenteral Sedatio	52	6	6	4	12	24			
Oral Surgery	60						60		
Genitourinary	90	9	6	6	15				54
ENT	75					75			
Others	120	18	18	12	48	12		12	
TOTAL	855	112	122	63	201	111	60	36	150

This spreadsheet contains workload estimates for each of the selected surgeries provided by each of the clinics listed below.

Craig = Craig Road Family Practice Clinic
Kohler = Kohler Loop Family Practice Clinic
Harrison = Harrison Aviation Family Practice Clinic
Main = Main Hospital Family Practice Clinic
Ent = Otolaryngology (ENT) Clinic
DC#2 = Dental Clinic #2
Surg = Surgical Clinic
Urology = Urology Clinic

Approval:

I have approved the list of selected surgical procedures contained herein to be done in an inpatient setting as ambulatory surgery.



COL Rafael Linares, Deputy Commander for Clinical Services

Appendix F

Impact Analysis

This appendix shows the workload and financial data used in developing actual and projected efficiency and monetary data. All actual information was taken from the fiscal year 1986 Review and Analysis data maintained in the Resource Management Division at RACH.

Development of Ambulatory Surgery Supply Cost.

Physicians and nurses provided a list of supplies used for a vasectomy, endometrial biopsy, and oral surgery. Typical supply costs for these surgeries could be determined because, within each group, there are a relatively homogeneous group of procedures with little variation. The other procedures on the approved list are, in fact, catch-all terms which include a large variety of procedures, not necessarily similar in terms of supplies consumed. Prices for the items were taken from supply records at RACH. This cost is for needles, syringes, anesthesia, surgical blades, and specialty equipment like endocervical currettes or dental carbide burrs, and the cost of analgesics.

Vasectomy	$ 10.67
Endometrial Biopsy	$ 38.43
Oral Surgery	$ 18.69

Additionally, there is a cost for expendable items not actually consumed during surgery, such as knife handles, forceps, scissors, speculums, and clamps. The cost of these items per outpatient surgery could only be estimated. After discussion with the Chief of Central Materiel Service, $5.00 was agreed to be a generous estimate and was added to the cost of each type of surgery. To prevent underestimation of costs and bias in favor of changing to ambulatory surgery, the cost was then increased by 50 percent. This resulted in the following procedure costs, which were multiplied by the estimated number of each surgery, as shown. The cost of these three procedures was averaged and multiplied by the number of all other procedures. This was added to the subtotal to determine the total supply cost for all ambulatory surgeries.

Vasectomy.	276	x	$23.51	=	$6,488.76
Endometrial Biopsy	89	x	$65.14	=	$5,797.46
Oral Surgery	60	x	$35.54	=	$2,132.40
			SUBTOTAL	=	$14,418.62
			Average Cost per Procedure	=	$33.92
Other Procedures	430	x	$33.92	=	$14,585.60
			TOTAL COST	=	$29,004.22

Development of Projected Workload

The Medical Care Composite Unit (MCCU) is calculated by weighting the following four workload factors as shown and adding the result: Admissions x 10; Occupied Bed Days x 1; Total Clinic Visits x 0.3; Live Births x 10.

Actual Workload, 1986

1.	Admissions	10,122
2.	Occupied Bed Days	41,436
3.	Total Clinic Visits	557,547
	(Ambulatory Clinic Visits)	(465,413)
4.	Live Births	1,274
	Total MCCU	322,660
	Daily Average MCCU	884

The projected workload was determined by deducting 855 visits from Ambulatory Clinic Visits, and adding 855 admissions and bed days.

Projected Workload, 1986

1.	Admissions	10,977
2.	Occupied Bed Days	42,291
3.	Total Clinic Visits	556,692
	(Ambulatory Clinic Visits)	(464,558)
4.	Live Births	1,274
	Total MCCU	331,809
	Daily Average MCCU	909

Development of Projected Costs

Actual costs, 1986:

Hospitalization Cost	$4,538,191
Ambulatory Clinic Cost	$8,540,385
Medical Care Supply Cost	$5,415,728
Medical Care Cost	$30,918,471
Average Personnel Strength	877

Only hospitalization cost and ambulatory clinic cost will change. This results from shifting the total supply cost of the surgeries developed earlier from Ambulatory Clinic Cost to Hospitalization Cost.

Projected costs, 1986:

Hospitalization Cost	$4,567,195
Ambulatory Clinic Cost	$8,511,381
Medical Care Supply Cost	$5,415,728
Medical Care Cost	$30,918,471
Average Personnel Strength	877

Development of Projected Productivity Ratios

Actual Productivity Ratios, 1986:

Medical Care Supply Cost per MCCU	$16.79
Medical Care Cost per MCCU	$95.82
Medical Care Personnel Staffing Ratio	99
Average Length of Patient Stay (days)	4.1
Hospitalization Cost per Bed Day	$109.52
Hospitalization Cost per Admission	$448.35
Ambulatory Clinic Cost per Clinic Visit	$18.35

The projected productivity ratios are simply recalculated using the projected workload and projected costs developed above.

Projected Productivity Ratios, 1986

Medical Care Supply Cost per MCCU	$16.32
Medical Care Cost per MCCU	$93.18
Medical Care Personnel Staffing Ratio	96
Average Length of Patient Stay (days)	3.85
Hospitalization Cost per Bed Day	$107.99
Hospitalization Cost per Admission	$416.07
Ambulatory Clinic Cost per Clinic Visit	$18.32

Sensitivity Analysis

The sensitivity analysis was performed by reducing the projected ambulatory surgery workload by 50 percent to 427 procedures. The average supply cost was increased by 100 percent to $67.84, for a total cost of $28,967.68. Projected workload, projected costs, and projected productivity ratios were then recomputed as described above.

Projected Workload, 1986

1. Admissions	10,549
2. Occupied Bed Days	41,863
3. Total Clinic Visits	557,120
(Ambulatory Clinic Visits)	(464,986)
4. Live Births	1,274
Total MCCU	327,229
Daily Average MCCU	897

Projected costs, 1986:

Hospitalization Cost	$4,567,159
Ambulatory Clinic Cost	$8,511,486
Medical Care Supply Cost	$5,415,728
Medical Care Cost	$30,918,471
Average Personnel Strength	877

Projected Productivity Ratios

Medical Care Supply Cost per MCCU	$16.55
Medical Care Cost per MCCU	$94.49
Medical Care Personnel Staffing Ratio	98
Average Length of Patient Stay (days)	3.97
Hospitalization Cost per Bed Day	$109.10
Hospitalization Cost per Admission	$432.95
Ambulatory Clinic Cost per Clinic Visit	$18.30

Although workload, costs, and productivity do not show the significant increase present in the original calculations, there is still improvement. In terms of revenue enhancement, the increase in MCCU of 4,569, would have resulted in an additional $76,028 in the supply accounts.

All data in this Appendix is shown on the spreadsheet on the following page.

SUMMARY OF IMPACT ANALYSIS

WORKLOAD	ACTUAL	PROJECTED	SENSITIVITY *
Admissions	10,122	10,977	10,549
Occupied Bed Days	41,436	42,291	41,863
Total Clinic Visits	557,547	556,692	557,120
(Ambulatory Clinic Visits)	(465,413)	(464,558)	(464,986)
Live Births	1,274	1,274	1,274
Total MCCU	322,660	331,809	327,229
Daily Average MCCU	884	909	897
COSTS			
Hospitalization Cost	$4,538,191	$4,567,195	$4,567,159
Ambulatory Clinic Cost	$8,540,385	$8,511,381	$8,511,486
Medical Care Supply Cost	$5,415,728	$5,415,728	$5,415,728
Medical Care Cost	$30,918,471	$30,918,471	$30,918,471
Average Personnel Strength	877	877	877
PRODUCTIVITY RATIOS			
Medical Care Supply Cost per MCCU	$16.79	$16.32	$16.55
Medical Care Cost per MCCU	$95.82	$93.18	$94.49
Medical Care Personnel Staffing Ratio	99	96	98
Average Length of Patient Stay	4.1	3.85	3.97
Hospitalization Cost per Bed Day	$109.52	$107.99	$109.10
Hospitalization Cost per Admission	$448.35	$416.07	$432.95
Ambulatory Clinic Cost per Clinic Visit	$18.35	$18.32	$18.30
SUPPLY DOLLARS EARNED @ $16.64/MCCU	$5,369,062	$5,521,302	$5,445,091

* This column contains data from the sensitivity analysis, wherein unit costs were doubled and projected workload was reduced by one-half.

Approval:

Martha N. Langford

LTC David L. Sheets, Comptroller

Appendix G

Implementing Regulation

This Appendix contains the implementing regulation for ambulatory surgery at Reynolds Army Community Hospital. It was written and published using information and concepts developed herein and represents the final approval of the project.

DEPARTMENT OF THE ARMY
HEADQUARTERS, US ARMY MEDICAL DEPARTMENT ACTIVITY
Fort Sill, Oklahoma 73503-6300

MEDDAC MEMORANDUM
No. 40-68

26 May 1987

Medical Service
MINOR SURGERY PROCEDURES

1. PURPOSE. To establish policies to be followed for minor surgical procedures performed at Reynolds Army Community Hospital.

2. OBJECTIVES.

a. To assure the performance of the highest quality minor surgical procedures.

b. To ensure timely and efficient processing of patients.

c. To maximize patient comfort and satisfaction.

d. To ensure surgery scheduling conflicts are avoided.

e. To increase staff satisfaction by ensuring that the physician receives maximum support.

3. POLICIES AND PROCEDURES.

a. Procedures identified to comply with this policy are as follows:

(1) All vasectomies.

(2) All endometrial biopsies.

(3) Selected oral surgery patients.

(4) Endoscopies.

(5) Selected Genitourinary procedures.

b. These procedures will be performed only in areas identified in paragraph 3c below.

c. Identification of Minor Surgery Areas:

(1) Operating Room #4

(2) Surgical Clinic

(3) Dental Clinics (Oral Surgery Only)

(4) Reynolds Family Practice Clinic Minor Procedure Room

(5) SICU (Endoscopies Only)

d. Scheduling Procedures:

(1) For OR #4:

(a) Submit completed Buck Slip (DA Form 4107) to OR one week prior to the scheduled procedure.

(b) Schedules for family practice physicians will be established within the Department of Family Practice and coordinated with the Chief, OR Nursing Service.

(c) If a surgical emergency arises, minor procedure(s) will be delayed or rescheduled.

(2) For any Minor Surgery Area other than OR #4:

(a) A DA Form 2496 (Disposition Form) will be hand carried to the Chief, Clinical Nursing Service, Room 411, on Thursdays, and will list procedures scheduled for the next five duty days.

(b) The DF will include the name and sex of the patient, name of the procedure, date of admission and date of procedure.

e. Patient Workload:

(1) For OR #4:

(a) Initially only five procedures scheduled per day.

(b) Procedure should not exceed 30 minutes.

(2) Procedures scheduled through clinical elements for areas other than OR #4 will be monitored for bed assignment by Chief, Clinical Nursing Service.

f. Anesthesia Protocols:

(1) No IV sedation for minor procedures unless additional personnel are readily available to monitor the patient.

(2) American Society of Anesthesiologists (ASA) classification 1 or 2 for OR #4.

(3) Complete Blood Count (CBC) must be done the day prior to the procedure. (If Monday procedure, CBC must be done Friday prior). Results will be acceptable up to three days before the procedure.

(4) Minimum of Hep Lok for IV access done on ward pre-operatively or by primary physician in OR.

(5) Patient to be connected to electrocardiograph (EKG) and blood pressure cuff, except for local without sedation. Audible EKG rhythm will be loud enough to be heard by primary physician.

(6) Nothing by mouth (NPO) after midnight.

(7) Light oral (PO) medication/sedation 30-40 minutes pre-op.

(8) Staff will consist of a physician and an assistant. (Nursing Assistant/Technician).

g. Recovery:

(1) Post Anesthesia Recovery (PAR) scoring will be conducted on sedated patients by the physician at end of procedure. If scoring is less than seven, patient goes to Recovery Room. If seven or greater, patient will be returned to the ward.

(2) PAR scoring will be conducted on arrival to ward by nurses. If less than seven upon arrival to ward, attending physician or Chief, Anesthesia will be notified and a determination made to admit the patient to the Recovery Room.

(3) Any patient receiving parental sedation/analgesia must have vital signs (BP/P/R) recorded on SF Form 517 a minimum of every 10 minutes during duration of the procedure.

(4) Minimum post-op-stay of 45 minutes.

(5) Following criteria for discharge of patients who received sedation:

(a) Ability to ambulate without assistance.

(b) Complete orientation to person, time and place.

(c) Demonstrate ability to maintain PO fluids.

(d) Must be discharged in care of responsible adult.

4. IDENTIFICATION OF INDIVIDUAL RESPONSIBILITIES.

a. Attending Physician:

(1) Identification of patient.

(2) Scheduling of patient.

(3) Preliminary instructions for admission.

(4) Care of patient.

(5) Documentation of care/treatment.

(6) Visually evaluate the patient subsequent to recovery and prior to discharge from the hospital.

(7) Discharge patient.

b. Patient Administration Division: Provide routine support in accordance with established policies.

c. Department of Nursing: Provide inpatient nursing support.

d. Anesthesia Service:

(1) Will assist in management of unexpected untoward reactions in the OR.

(2) Will act as quality control for sedative/analgesic requirements.

e. Operating Room:

(1) Will maintain separate Log Book for procedures performed in OR #4.

(2) Will provide one technician to assist physician for procedures performed in OR #4.

(3) Will ensure quality control of OR #4 and equipment/supplies.

f. Department of Pathology: Provide routine support in accordance with established policies.

(HSUA-CS)

FOR THE COMMANDER:

JACK E. BRADFORD
COL, MS
Deputy Commander for
Administration

OFFICIAL:

"/S/"

BARBARA A. WILSON
CPT, MS
Information Management Officer

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A STUDY TO DETERMINE THE BEST METHOD OF CARING FOR CERTAIN SHORT-STAY SURGICAL PATIENTS AT REYNOLDS ARMY COMMUNITY HOSPITAL

12. PERSONAL AUTHOR(S)
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Quality assurance conerns and limited resources prompted this study to determine if some surgical patients at Reynolds Army Community Hospital, Fort Sill, Oklahoma, could be better cared for, while providing more resources for the hospital. Based around the concept of same-day surgery, the study determined that an ambulatory surgery program could be instituted within existing resources. An extensive list of ambulatory surgical procedures was developed, reflecting the emphasis on reducing hospital stays in the civilian community. Patient selection criteria are included, describing the procedures for selecting patients appropriate for same-day surgery. An analysis of facility and personnel resources was done, along with an economic analysis. The most serious concern was the large number of minor surgical procedures being done in hospital and outlying clinics. These procedures were done in rooms that were less than adequate and with minimal monitoring. The hospital received reimbursement far below cost, as these
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procedures are reimbursed as a simple clinic visit. By having these operations done on an inpatient surgery basis, the patients would receive better care. The hospital would receive an increase in supply funding based on an increased amount of inpatient care. Implementation would also provide a foundation for expansion of the ambulatory surgery concept when resources are based on Diagnosis-Related Groups (DRG) rather than Medical Care Composite Units (MCCU), and when the hospital moves into its new facility, currently under construction. Based on the recommendations of the study, the program was implemented.